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TAMPERE UNIVERSITY OF TECHNOLOGY

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SUSTAINABLE DEVELOPMENT: OBJECTIVES, ENABLERS AND CHALLENGES FOR SPANISH COMPANIES

MASTER OF SCIENCE THESIS

The subject was approved by Tampere University of Technology
Meeting on 25th May 2011

Examiner: Prof. Seppo Torvinen
Tampere 2011

ABSTRACT

TAMPERE UNIVERSITY OF TECHNOLOGY
Master's Degree Programme in Industrial Engineering
TORRES ROMIGUER, ALEXANDRE: Sustainable development: objectives, enablers and challenges for Spanish companies
Master of Science Thesis, 81 pages
May 2011
Examiner: Professor Seppo Torvinen
Keywords: Sustainability; Sustainable development, sustainable manufacturing, competitiveness, environment, improvement.

This report presents the results of a research project focusing on Spanish companies' views on sustainable development. Based on a literature review, definitions, objectives, benefits and requirements of sustainable development are presented. Also, some of the best sustainable practices are introduced. Then, based on the results of a questionnaire survey, the Spanish companies' opinions are presented and compared to a previous international study.

This study carried out examines existing and emerging sustainable development challenges facing Spanish companies from an organizational point of view. It explores how Spanish companies can work to address these challenges, in a manner that will simultaneously contribute to sustainable development in a broader societal perspective.

In this study, surveys were conducted as the primary source of information collection. Specifically, thirty-eight Spanish companies from various fields were surveyed. The questionnaire finding identified several current sustainable development challenges facing the Spanish companies. These included: improving stakeholder engagement, increasing sustainable development performance disclosure, incorporating voluntary initiatives into company strategies, improving value chain management, measuring sustainability performance, managing and adapting to climate change, and in general, developing and implementing a sustainable development strategy.

Spanish companies are currently focused on improving the well-being of the employees with safe and healthy work environments, worker job security, human rights and affordable quality health care programs. Furthermore, in order to ensure future success and competitiveness, Spanish companies must also address the needs of developing and integrating clean technologies into their operations, and facilitate the continual improvement of pollution prevention techniques. In fact, the results suggest that the Spanish companies must make an effort in implementing best practices from the environmental point of view. Therefore, the results clarify the companies' current state and expectations to assist both industry and academia on the way towards sustainability.

ACKNOWLEDGMENTS

First, I would like to thank my advisor Dr. Mikko Koho. Dr. Koho's practical approach, extensive knowledge, and positive encouragement have been instrumental to the successful completion of this Master thesis. Furthermore, Dr. Mikko Koho demonstrated patience during the numerous revisions of my plan of study and without him I would not have been able to progress though my report as fluently as I did. I would also like to thank my supervisor Pr. Seppo Torvinen. Although I could not have much direct contact with him because of his current job situation in United States, Professor Torvinen has always been there when I needed. A special thanks to both of them because furthermore they gave me the opportunity to focus on this study and let me work together with the project team of KEKE.

I would also like to thank all the members of the KEKE project with whom I have been working all this time, and especially, thanks to Bill Bernstein and Devarajan Ramanujan for checking the spelling and grammar of my report as my English skills are not perfect, which had made this task much more difficult.

Furthermore, I would also like to thank the professionals of the Spanish companies who participated in my research surveys. Their contributions facilitated a more informed and constructive project. I would also like to thank personal contacts, who helped maintain relationships with the companies surveyed throughout this study.

Lastly, I would like to thank my family and friends. I thank them for providing me with encouragement and hope. I would especially like to extend my sincere gratitude to my mother, Carme, who has guided me through life offering wisdom and support in the most appropriate of times.

Tampere, 16th of May 2011

Alexandre Torres Romiguer

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1. Introduction

"Actually we all have a problem. We have fast growing economies and high consumption but at the same time raw materials are replaced by mountains of garbage"
– M. Braungart & W. McDonough, 2009.

The above quotation highlights the importance of making a change in our current production system to realize a more sustainable model without losing competitiveness in the product and service. The current situation invites us to change the modus operandi of organizations to fuse the dynamics of economic prosperity with increased social welfare and environmental improvement.

This is when the term "sustainable development" comes into play. Sustainable development can be defined as *"meeting the needs of the present without compromising the ability of future generations to develop"* [1]. When it comes to implementing sustainable development at a firm level, this concept must be taken into account throughout the entire product life cycle. The objectives pursued by sustainable development on the corporate level are summoned around three key issues: social, environmental and also economic. Achieving these objectives not only helps to move toward sustainability, but also leads to improve competitiveness.

This project includes an empirical study that focuses on the current situation of Spanish companies to identify to what degree the Spanish companies based its modus operandi toward sustainability. In Spain, the major current environmental concerns include the strong emissions of gases, air quality, water quality, the unsustainable consumption of patterns, waste treatment, biodiversity loss, soil degradation and, in general, unsustainable use of natural resources. All these elements have been identified as key issues in Spain on an annual basis within the "Observatory of Sustainability in Spain" [2].

This study intended to evaluate the results in order to draw the relevant conclusions and suggest changes and improvements in the different production cycles of these companies.

The following sections provide a detailed overview of this study. First, the objectives and research questions are presented, and then the focus and scope of the study and types of companies considered are defined. After that, the relevance and need for the study are explained, and, finally, the outline dissertation is presented.

1.1. Objectives and research questions

This study aims to identify the current situations and needs of the participating companies, and to suggest changes and improvements for moving toward sustainability.

The project's main objective is to highlight the importance of using sustainability criteria in the modus operandi of the companies, and that is why, the first part of this project is to define and deepen on this topic. The project also focuses on assessing the several benefits and opportunities implementing a sustainable strategy in the company offers. Furthermore, the theoretical part considers the different requirements and some of the best practices to realize sustainable development at a firm level.

After assessing the results of the study, the study also proposes solutions and improvements to achieve a higher degree of sustainable development. The objectives and research questions were formulated as follows:

Primary objective:

To assess the current business modus operandi and to identify best practices to achieve more sustainable development

Sub-objective 1:

To identify to what degree the Spanish companies based its modus operandi toward sustainability and what they think about this issue.

Research question 1:

What degree the companies based its modus operandi toward sustainability and what do they think about this issue?

Sub-objective 2:

To identify best practices to achieving sustainable development.

Research question 2:

Which are the best practices for achieving sustainable development?

1.2. Focus and scope

The project focuses on studying the current situation of the Spanish companies to identify to what degree they based their modus operandi for achieving sustainable development. Furthermore, this study focuses on suggesting and identifying best practices for achieving sustainable development at a firm level. For this, effective tools such as surveys and interviews will be used to ensure that the information is of good quality so that we can evaluate the results in a more objective way. The survey

questions will be drawn from the documents and questionnaire provided by the project KEKE of the department of production of TUT. The structure of the survey is based on a Google spreadsheet to automate and facilitate the task of collecting data from these surveys.

Regarding the companies' size, big companies will be preferred as most of them have several departments (marketing, engineering, sales, research and development, sourcing, production, HR) and this makes it possible to obtain more comprehensive results on this study. Although the weight of large firms is concentrated in the industrial sector, the rest of the sectors, such as services, trades, and construction, have been considered as they represent the biggest percentage of Spanish companies.

Finally, the results will be analyzed and will focus on proposing solutions and enhancements for greater sustainability and competitiveness in its production cycle, always bearing in mind the three pillars of sustainability: economy, society and environment.

1.3. Importance and need for this study

The motivation for this study is based on understanding how systems are designed for the current modus operandi of Spanish companies and understand how they think and their concerns regarding sustainability. It is about revealing the organizations' fundamentals pillars when they operate.

The importance of this study lies in awareness to the companies of a potential paradigm shift in their supply chain and general modus operandi, having in mind the principles of sustainability.

In terms of environmental sustainability, it is necessary to make efficient and rational use of natural resources, particularly energy, water resources, biodiversity and soil, as well as active policies to mitigate the determinants climate change in all productive sectors. Ensuring the availability and quality of these resources within consistent economic growth and the possible threats of climate change is one of the biggest challenges facing developed countries. An inefficient consumption of available natural resources represents an increase of greenhouse gas emissions and other air pollutants, compounds the problem of energy dependence, has consequences about the health and endangers the survival of activities such as agriculture. All of this requires improving the management of the productive sectors, adopting improved technologies, optimizing the transport networks, facilitating a modal shift in transport use, controlling emissions of greenhouse gases and other pollutants and increasing the economic value

of waste as well as training, report and awareness to the citizens and the companies of the benefits of these measures [2].

Specifically, Spain has been progressively increasing its energy consumption and energy intensity. Therefore, the excessive dependence on foreign energy and the need to preserve the environment and ensure sustainable development requires innovative, new formulas that allow more efficient use of energy and encourage the use of cleaner sources [2].

1.4. Outline of dissertation

Structurally, this dissertation can be divided into the following five main parts:

1. *Introduction.* The first part of the dissertation, introduces the study and its topic, its objectives and focus, discusses its need and importance, and provides an overview of its progress and phases.

2. *Background and framework for the study*. The second part provides the background and framework regarding to sustainable development. It covers the theoretical background explaining the basics of the idea of sustainable development, as well as shows the several benefits and opportunities that implementing sustainable development offers. Furthermore, the theoretical part considers the different requirements and some of the best practices for realizing sustainable development at a firm level.

3. *Research methodology*. The third part of the dissertation presents the research methodology. The research methodology includes the objectives of the research study and methods used to collect and analyze data.

4. *Results of the study, evaluation and discussion.* The fourth part reports the results of the study and evaluates and discusses them.

5. *Conclusions.* A summary with some key findings and conclusion compound the last part of the dissertation.

2. Sustainable development

This section begins by presenting a brief history of sustainable development. It quotes several reports that provides a definition of sustainable development as it is known today. This section also introduces the concept of sustainable development and objectives are presented next based on several resources. The section concludes with a brief summary about consumption and production patterns and introduces the terms of sustainable consumption and sustainable production, where the last one will be deeply discussed in the next section as it is the core of the project.

2.1. Relevant background of sustainable development

Of the numerous definitions to be found in literature, the least controversial definition, or the one most commonly accepted, states that sustainable development is *"meeting the needs of the present without compromising the ability of future generations to develop"* [1]. This concept has received the most attention since the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. However, sustainable development's history goes back further than Rio.

Sustainable development could be born out of the emerging environmental movement of the 1960s. The movement was concerned that human activity was having severe and negative impacts on the planet, and the patterns of growth and development would be unsustainable if they continued unchecked. The report called "The Limits to Growth" [3] was one of the key works that highlighted this thinking. However, this report did not define what the goal of public policy should be.

The "World Conservation Strategy" [4] and "Our Common Future" [1] (also known as the Brundtland Report after the chairman of the committee) provided the answer as "sustainable development" – and thus the concept of sustainable development was born.

There are various definitions aimed at describing "sustainable development" in a manner most favourable to the user's point of view. For instance, the "Forum for the Future organization" [5] defines sustainable development as a dynamic process which enables all people to realise their potential and improve their quality of life in ways which simultaneously protect and enhance the Earth's life support systems. On the other hand, UNESCO defines sustainable development as international resource development that is socially desirable, economically viable, culturally appropriate and ecologically sustainable [6]. A quite similar definition was given by "ESD Toolklit 2.0" [7], and highlights that sustainable development is often thought to have three components:

environment, society, and economy. The well-being of these three areas is intertwined, not separate. But the one most commonly used definition is contained in the document “Our common Future” [1]. This report describes sustainable development as a term applied to economic and social development that allows practitioners to meet the needs of the present without compromising the ability of future generations to meet their own needs.

2.2. Objectives of sustainable development

There are two fundamental concepts regarding the use and sustainable management of natural resources of the planet. Firstly, there is a need to meet basic human needs such as food, clothing, and places to live and work. This implies paying attention to the needs which are largely unmet, including the world’s poor. Without particular attention, a world where poverty is endemic will always be prone to ecological disasters of all kinds. Secondly, the limits to development are not absolute but are imposed by the levels of technology and social organizations, their impact on environmental resources and the capacity of the biosphere to absorb the effects of human activity [1].

Sustainable development consists of three structural pillars characterized by social objectives, i.e. trying to realize a society based in the equitable distribution of natural resources, the voluntary acceptance of ecological limitations; and the pursuit of economic efficiency. In brief, the concept of sustainable development looks for egalitarian development that respects the environment and moreover is economically possible [1]. Figure 2.1 shows the pattern of these three pillars.

Figure 2.1: The three pillars of sustainable development

Social perspective

The fundamental objective of sustainable development is to meet basic human needs, especially those of the poor, and recognition of the limitations associated with technology and social organizations that impact the capacity of the environment to meet both present and future needs [1].

Population control may be required by the poor countries that cannot afford any reduction in per-capita resource use [1]. Sustainable development is at the hub of the population control initiatives that have overtaken the globe in the last years [8]. In the UN's International Conference on Population and Development (Cairo 1994) a clear linkage between development and population was made: explicitly integrating population demographics into economic and development strategies will both speed up the pace of sustainable development and contribute to the achievement of population objectives.

It is also necessary to achieve an equity within and between the present and future generations which looks at how future generations can have a similar or better standard of living compared to those living today. This includes a need for fairness in the distribution of resources, and the entitlement of everyone to an acceptable quality and standard of living [1]. Furthermore, the potential of productivity of the whole society and its branches should be maintained also for future generations [9].

Community participation is fundamentally required to achieve health and sustainable development at the local level. It is important for many different reasons and offers many different benefits for individuals, communities, organizations and society as a whole. For instance, community participation helps target resources more effectively and efficiently. Furthermore, community participation methods can help develop skills and build competencies and capacities within communities. It is also a way of extending the democratic process, of opening up governance and of redressing inequality in power. Therefore, community participation offers new opportunities for creative thinking and innovative planning and development [10].

Education plays an essential role as we move towards more just and sustainable relationships and hence world order. Education for sustainable development aims to help people to develop the attitudes, skills and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions [11]. "Agenda 21", the Rio Declaration recognises education as a key tool of sustainable development. It specifically states that education is critical for achieving environmental and ethical awareness, values and attitudes and behaviour consistent with sustainable development and for effective public participation in decision-making (United Nations, 1992).

Economic perspective

In terms of economic objectives, economic growth is required in areas where the basic needs are not meet. Economic growth will remain the basis of human development, but it must change and become less environmentally destructive. For that, it will be necessary to change the current consumption and production patterns to procure significant benefits [12].

It is also necessary to achieve an economic system that satisfies efficiently the individual and social needs. The "Enquete Commission of the 13th German Budestag" [9] proposed an economic rule that aims to enable this new economic system. The Commission manifests that the economic order has to be shaped in a way that it promotes personal initiative and that the individual interest serves the common interest for the sake of securing the well-being of present and future populations. It has to be organized in a way that private and common interests are reconciled with each other. Each member of society gets benefits from the social systems; according to personal payment put into the social systems and according to special needs.

Sustainable development also aims a greater range of markets. In fact, in recent years, markets for sustainable products have expanded significantly, growing much faster than those for conventional products. This data was revealed by the "State of Sustainability Initiatives Review 2010" [13], and says that sustainable development allows reaching significant levels of market penetrations.

The last objective of sustainable development from the economic point of view is the cost savings [12]. It also can be seen as a benefit consistent with energy conservation and waste reduction from the environmental field.

Environmental perspective

The main environmental objective consists designing a sustainable infrastructure to help reduce the dependence of fossil fuels, a non-renewable energy source. This may include the development of mass transit alternatives like the tram, metro and bus systems. It can also imply providing electrical connections for recharging cars, hydrogen refuelling stations, and other similar equipment for alternative fuels. In terms of creating energy, especially electricity, sustainable infrastructure means using methods that do not depend heavily on fossil fuels. This includes construction of infrastructure, such as wind farms and even hydropower plants that depend on these resources. Plants using coal and natural gas as their primary sources of energy are not sustainable over many years because the consumption of such resources exceeds the resource capacity to recover. Also, this sustainable infrastructure has to ensure that water supply is safe and consistent. If leaks and contaminants enter a water supply, it may confine the effectiveness of the system and lead to a significant waste of resources.

To cope with this problem, the public services of water must invest a significant portion of revenues in an improvement plan to promote sustainable practices [14].

In addition, “Agenda 21” [12] contends that, from the environmental perspective, the objectives of sustainable development include all about resource conservation and pollution prevention. The objectives consists on combating deforestation, desertification and drought; achieving sustainable agriculture and rural development; conservation of biological diversity, protecting the atmosphere, oceans and freshwater; safer use of toxic chemicals; and managing hazardous, solid and radioactive waste.

Furthermore, the “Brundtland Report” [1] says that environmental constraints have to be imposed to preserve the carrying capacity on Earth, and the use of non-renewable resources should be as efficient as possible.

2.3. Consumption and production patterns

The plan of action, “Agenda 21” [12], states that poverty and environmental degradation are closely interrelated. While poverty results in certain kinds of environmental stresses, the major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries, which is a matter of grave concern, aggravating poverty and imbalances. “Agenda 21” introduced the concept of “consumption and production patterns”: *“To achieve sustainable development and a higher quality of life for all people, states should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies”*.

The “Johannesburg World Summit on Development World 2002” stated that changing consumption and production patterns is one of the overarching objectives and essential requirements for sustainable development. It agreed that all countries should promote sustainable consumption and production patterns, with the developed countries taking the lead and with all countries benefiting from the process [12].

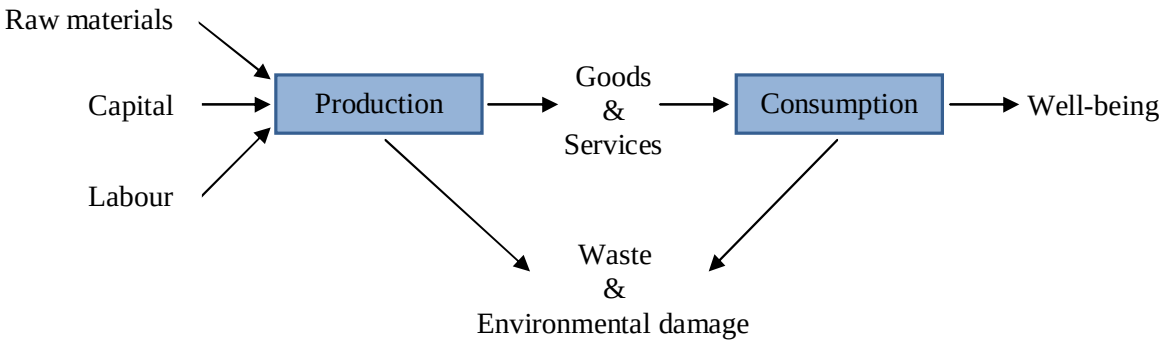

Figure 2.2: Relationship between consumption and production

Figure 2.2 represents a conventional understanding of the relationship between consumption and production in industrialised societies. The figure shows that goods and services are created from inputs as raw materials, capital and labour. The production process and consuming these goods and services generate waste and cause environmental damage. Assuming that this supply chain view is accepted, it follows that the aim of sustainable development strategies must be to maximise consumption while minimising waste and environmental damage [15].

The working definition of sustainable consumption was adopted in January 1994 by the Oslo Symposium [16]: *"the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not jeopardise the needs of future generations."* The Oslo Symposium also defines sustainable production as *"the creation of goods and services using processes and systems that are non-polluting, conserving of energy and natural resources, economically viable, safe and healthful for employees, communities, consumers and socially and creatively rewarding for all working people."*

While sustainable production addresses the supply side of the equation, sustainable consumption addresses the demand side, looking at the extent of goods and services required to meet basic needs and improve quality of life – such as food and health, shelter, clothing, leisure and mobility. These needs must be delivered in ways that reduce the burden on the Earth's carrying capacity [17].

3. Sustainable development at the firm level

The need to move towards a more sustainable development model is a significant challenge for companies. The demands of society continue to grow and companies are somewhat confused about the role to be played on this issue. Implementing sustainable development in a company helps drive a profitable economic strategy, which generates savings, gives access to important market quotas and improves the social image of the company. But, to enforce sustainability in their activities, the companies should be increasingly flexible and adaptable; they must constantly review their business models; they should question their practices and behaviour and acquire the ability to systemically analyze their activities and their interrelationships.

This chapter aims to provide the knowledge and skills needed to seize the enormous opportunities that sustainable development entails for the companies and ultimately, help to meet this important and growing business demand. Firstly, the business benefits of realizing sustainable development are detailed. Then, the most important requirements to realize sustainable development at the firm level are explained. Finally, four best practices to achieve sustainable development are introduced to have a general idea of what they are and how to carry them out.

3.1. Business benefits of realizing sustainable development

A coherent sustainable strategy, based on integrity, solid values and a long-term approach, offers clear business benefits to organisations and a positive contribution to the welfare of society. Companies that take a more sustainable approach enjoy positive benefits, which include:

- *Enhanced brand value and reputation.* Environmental performance is an issue that a significant number of people use when judging companies. That is why a sustainable development corporate strategy serves an excellent opportunity to increase brand value and improve the industry image [18] [19].

- *Customer attraction and retention.* Sustainable development help customers differentiate between similar products and providers, price and performance being equal. Some customers see sustainable development as a key purchasing criterion and are willing to pay a premium or compromise on performance [18]. On the other hand, existing customers will have an extra reason to keep their confidence in the products offered by the companies that rely on sustainable development.

- *Differentiation.* Marketing provides concepts that catapult the truth of a company's sustainable practices, with regards to its products and services. It is a weapon of companies in generating advantages over its competitors in a constant race to find maximum differentiation within the current customer culture where there is a great similarity of products within the same category [19].

- *Lower operating costs and generating increased revenues.* Operating costs can be reduced through sustainable practices such as waste minimization, pollution prevention and the elimination of health and safety hazards. Sustainable development can bring not only cost benefits, but also have a positive impact on revenue [18] [19]. Requirements and sustainable practices to reduce cost and generate revenue are explained in detail in the next chapter.

- *Improvement management of risk.* Reputational risk is one the business success measures most strongly affected by a company's sustainable development performance. The impact of a firm's action on its reputation dictates strategic decisions, and is particularly sensitive in the areas of human rights, pollution and integrity. For instance, incorporating environmental concerns in process design and respecting human rights reduce the risk of these liabilities as well as the impact they have on corporate image [18] [19].

- *Attracting and retaining talented staff.* Sustainable practices related with the well-being of the employees are shown to be a powerful way for helping companies attract and retain human capital. A positive reputation specifically in the areas of the environment and human rights will also increases a company's ability to attract and retain staff, while a negative reputation in these fields and a lack of ethics and integrity will decrease it [18]. Attraction and retention of talented staff seems to be a benefit that promotes and increases innovation in all fields.

- *Identification of new opportunities.* Organisations that focus on the environmental characteristics of products and process tend to share that openness to innovation [18]. The ability to innovate is a key competitive advantage in many industries that helps to find new opportunities and break boundaries when it comes to penetrating new markets.

These benefits gained from incorporating organization sustainable development principles will create a competitive advantage for the organization and enhances its position in the society. It also generates a positive perception of the company among customers and society. Therefore, promoting sustainable development within the organization benefits the enterprise in the long-term [18].

3.2. Requirements to realize sustainable development

According to the objectives of sustainable development presented in the first section, requirements on the corporate level can be divided into three key issues: economy, ecology and society. The economy principle means that a company is acting in an economically feasible manner. The ecology principle stands for the integration of environmental objectives and actions into strategy, and the implementation of environmental practices. The society principle covers the integration of stakeholders' social interests and the implementation of stakeholder management [20].

From the ecological and economic perspectives, eco-efficiency is a concept that covers the entire environmental requirements and some of the economical aspects needed to build a sustainable enterprise. Eco-efficiency is a term coined by the World Business Council on Sustainable Development (WBCSD) in 1992. It refers to the *"delivery of competitively priced goods and services that satisfy human needs and bring quality of life, whiles progressively, reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the earth's estimated carrying capacity."* The critical environmental requirements and economic aspects to take in count to create a sustainable enterprise are the following:

- *Reduction in waste and emissions.* Minimization of waste in a process industry. Adoption of organizational and operational measures that help decrease the quantity of hazardous wastes and pollutants generated to levels technically and economically feasible [21]. Also, it is better to use clean technologies to reduce pollution rather than using cleaning technologies to remove pollutants which have already been generated [14].

- *Reduction in energy intensity of goods and services.* Activities designed to achieve a balanced and efficient use of energy resources in order to reduce or avoid waste. Reflection on each of the shares of consumption allows creating a culture of sustainable development. Energy conservation seeks to reduce the energy waste, avoid the rapid deterioration of the planet and support sustainable development. Thus, the efficient use of energy is an opportunity to reduce economic and environmental impacts [21].

- *Use of renewable and sustainable energy resources.* Design sustainable infrastructure to help reduce dependence on fossil fuels, a non-renewable energy resource [14].

- *Maximum use and re-use of recycled components and materials.* This requires fundamental changes in the product design to incorporate re-processed and re-manufactured components and in the manufacturing processes and process

capability to make recovery, disassembly and re-processing as efficient as original manufacture [14][21].

- *Measurement and assessment of the business impact on ecosystems.* Environmental degradation affects the competitiveness of the productive sector though various aspects, including: lack of intrinsic quality along the production chain, increased costs incurred from remediation actions carried out in polluted environments and effects on labour productivity resulting from environmental quality. A monitoring scheme for estimating potential environmental impacts of products and manufacturing processes, and corrective actions for such impacts are needed. Furthermore new processes and technologies need to be established that avoid the traps and wastes of traditional operations [22].

- *Standard measures for evaluating sustainability performance.* Metrics and measures describing corporate performance and standardization of the methods by which companies approach environmental sustainability are needed for progressing toward sustainable development [22].

- *Environmental consciousness must pervade the culture of the whole organisation.* This requires clear company policies and statements of objectives. Awareness programmes must be introduced to the whole organisation and appropriate training must be given in environmental competences to all categories of employees. Clean processes and materials must become the norm in all aspects of the company's operations [14].

Corporate behaviour in line with sustainability can be understood as corporate social responsibility (CSR), as *"a concept whereby companies integrate social and environmental concerns into their business operations and in their interaction with their stakeholders on a voluntary basis"* [23]. Environmental requirements are not the only ones that a company should comply, but social issues are also very important. The following social requirements are included in CSR [23]:

- *Human resources management.* Responsible, non-discriminatory, ethical human resource management with the aim of reducing unemployment, fighting social exclusion and facilitating lifelong learning.

- *Healthy and safe working conditions.* This requires including occupational safety and health criteria into procurement schemes of the company and promoting a culture of risk prevention, in order to influence the quality of life of the working sector and increase in productivity.

- *Adaption to change.* Facilitating the ability of employees to adapt to changes caused by economically necessitated lay-offs. Restructuring might be carried out

in a socially responsible manner balancing and taking into consideration the interests and concerns of all those who are affected by the change and decisions.

- *Local communities.* Integrating the company into its local setting, keeping good relations with local stakeholders and, as part of that, meeting the needs of stakeholders in terms of information.

- *Managing business partners, suppliers and consumers relations.* By working closely with business partners, companies can reduce complexity and costs thereby increasing quality. Furthermore, companies, which build lasting relationships with customers by focusing their whole organisation on understanding what the customers need and want and providing them with superior quality, safety, reliability and service are expected to be more profitable. Such companies also create greater value for all involved parties.

- *Respecting and adhering to human rights.* This requires adopting codes of conduct covering working conditions and human rights. Codes of conduct should be enforced at every level of the organisation and product line. However, training of low level management, workers and communities on its implementation is equally important.

3.3. Sustainable practices

All the requirements commented in the last chapter are not only help companies to move toward sustainability, but also lead to improved competitiveness. In fact, these requirements can be seen as general sustainable practices that push the companies to obtain a great amount of business benefits. This is called sustainable competitive advantage. Product manufacturing plays an important role in its facilitation. The integration of environmental requirements through the entire lifetime of a product is a basic need for sustainable development at the firm level [24] [25].

As discussed at the end of the first section, sustainable manufacturing includes developing technologies to transform materials without using non-renewable or toxic materials, emitting pollutants, or generation of waste. This issue should be taken into account through the different stages of the product life cycle. Figure 3.1 shows the conceptual model of product lifecycle.

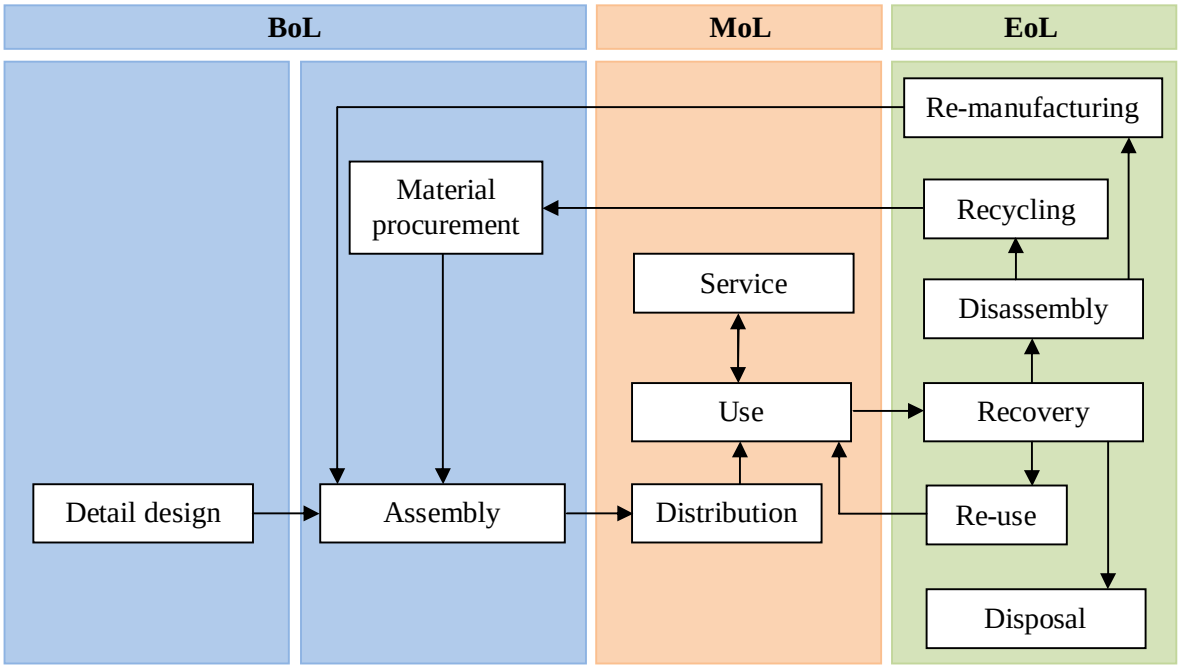

Figure 3.1: Product lifecycle (adapted from [26][27])

Every product lifecycle is characterised by three phases [27]:

- *Beginning of Life (BoL).* It is the phase where the product concept is generated and its physical model is realized. It includes design and manufacturing. The last phase of BoL involves material procurement and assembly of components.

- *Middle of Life (MoL).* This phase includes distribution of the finished product and use thereof. This phase also includes the service of maintenance during the usage product.

- *End of Life (EoL).* Characterised by different scenarios as recovery of used products, the subsequent re-use or disassembly thereof and finally, recycling or re-manufacturing of disassembled products. When the product cannot be re-used or recycled anymore, is carried out to disposal.

Sustainable practices can be implemented in all the stages of the product lifecycle. In order to provide some ideas in how to achieve the several benefits commented above, this chapter presents some of the most important sustainable practices at a firm level.

3.3.1. Sustainable supply chain management

The supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage, through to the end user, as well as the associated information flows. Supply chain management (SCM) is the integration of these activities through improved supply chain relationships to achieve a sustainable competitive advantage [28].

The term supply chain management has been defined by Mentzer (2002) as, *"the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole"* and by Lambert (2006) as, *"the integration of key business processes from end-user through original suppliers, that provides products, services, and information that add value for customers and other stakeholders"* [29].

The report "Future Supply Chain 2016: Serving Consumers in a Sustainable Way" [30] presents a model of integrated supply chain that takes into account sustainability parameters such as reduction of CO2 emission, reduction of energy consumption, better traceability and reduction of traffic congestion. This model also presents traditional measures such as the availability of existence, cost reduction and financial performance. The report reveals that the potential full impact of the redesign of the supply chain is substantial and includes reduction of handling and transports per pallet costs, reduction of delivery time, lower CO2 emissions and increased product availability at point of sale. This new model of supply chain can be called sustainable supply chain.

Stefan Seuring and Martin Müller (2008) defined sustainable supply chain management as *"the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements"*. They claim that, in sustainable supply chains, environmental and social criteria need to be fulfilled by the members to remain within the supply chain, while it is expected that competitiveness would be maintained through meeting customer needs and related economic criteria [28].

On the other hand, B. Cetinkaya, R. Curhberston, G. Ewer, T. Klaas-Wissing, W. Piotrowicz and C. Teyssen (2011) [31] carried out a study related to sustainable supply chain management in which they proposed six steps which should be executed in the supply chain when it comes to implement a strategy for sustainability.

Step 1: Analysis of the current state of supply chain business

The first step consists of understanding the existing corporate and competitive strategies and the associated strategic goals within the company particularly along the supply chain. Also, sustainability strategies must be taken into consideration if sustainability is not already part of the corporate strategy. The main objective of the analysis of the current state of the company is the identification of possible organisational goal conflicts that can become strong barriers to implementing a sustainable supply chain along its members.

Aiming to plague this first step is the limited availability of resources and capabilities in the company which must be allocated through the whole supply chain. The "Strategic Management Journal" [32] defines resources as *"input factors controlled and used by firms to develop and implement their strategies"*; and capabilities as *"capacities to coordinate and deploy resources to perform tasks"*. It means that these resources and capabilities are valued by the firm for their potential to gain a competitive advantage.

Step 2: Current and future impact factors

The most important supply chain input resources to be considered in this step are energy, fuel, natural resources, stakeholders and shareholders. This step aims to identify these resources in order to get a precise assessment of their risks and opportunity factors for the supply chain. Thus, this stage involves moving to a proper risk management model through understanding and forecasting input resource-related information that helps in developing a sustainable supply chain strategy.

Step 3: Identifying potential risks and opportunities

Once the supply chain input resources' commented above are detected, the next step consists of identifying potential risks and opportunities. The evaluation of these risks allows for assessment of the supply chain capabilities defined in the step before. This step aims to identify problems that may arise and would result in a deviation in time, cost or functionality. This phase also studies the root causes of these problems and helps to prevent their occurrences. Thus, it is for this reason that the company needs to understand the cause-and-effect relationships between potential success factors to undertake this evaluation.

Step 4: Re-design of the supply chain strategy

The fourth step consists on defining gaps between the current supply chain strategy and the changing business environment. Once defined, the next step is to make changes or re-design the existing supply chain strategy. This should be carried out taking into account the risks and opportunities identified in the step before. The greater and more relevant the potential risks and opportunities, the larger will be the gaps, and

the need to act and make strategy changes. The aggressiveness of how to attack the action plan must be in proportion to the size of the gaps. Thus, the larger the gaps, the broader the implications for implementing change.

The set of actions needed to close the gap and to create a customized sustainable supply chain in the long-term must be determined in a strategic sustainable supply chain program (SSC-program). The main objective of this program is to extend or re-design the existing strategy. Once this is done, the next step will consist on implementing this program for achieving a sustainable supply chain.

Step 5: Operationalisation of the new sustainable supply chain

Once redesigned, the new supply chain strategy should be operationalised whilst managing the various objectives and measures. To carry this out, some specific tools can be used. For instance, Kaplan and Norton (1990) [33] have developed a tool called *"Balanced Scorecard"* that allows translating strategic goals into operations through objectives and measures organised into four different perspectives: financial, customer, internal business process, and learning and growth.

Kaplan and Norton [33] quote that *"The Balanced Scorecard expands the set of business unit objectives beyond summary financial measures. Corporate executives can measure how their business units create value for current and future customers and how they must enhance internal capabilities and the investment in people, systems, and procedures necessary to improve future performance"*. Thus, a Balanced Scorecard is not only an operational measurement system, but also serves as a strategic management system, to help the company manage the strategy over the long-term.

Step 6: Integration of the sustainable supply chain

While the fifth step focuses on implementation issues in order to balance social, economic, and environmental objectives, with the aid of sustainable supply chain scorecard concept, the last step focuses on successful integration of the sustainable supply chain within the organisation. Thus, the strategy development and integration approach ends with this last step.

3.3.2. Lean production

The efficient management of any business ensures its competitiveness in the aspects that constitute the three big "legs" underlying industrial competitivity: quality, time (speed response) and cost.

The Lean Enterprise Institute [34] defines Lean production as *"a business system for organizing and managing product development, operations, suppliers, and customer relations that requires less human effort, less space, less capital, and less time to make products with fewer defects to precise customer desires, compared with the previous system of mass production"*. Thus, Lean production is a strategy for organizing production systems. It relates to activities ranging from product development, procurement and manufacturing over to distribution. The ultimate goal of implementing lean production in an operation is to increase productivity, enhance quality, shorten lead times, reduce cost, etc. [35] Figure 3.2 shows the basic principles of this production model.

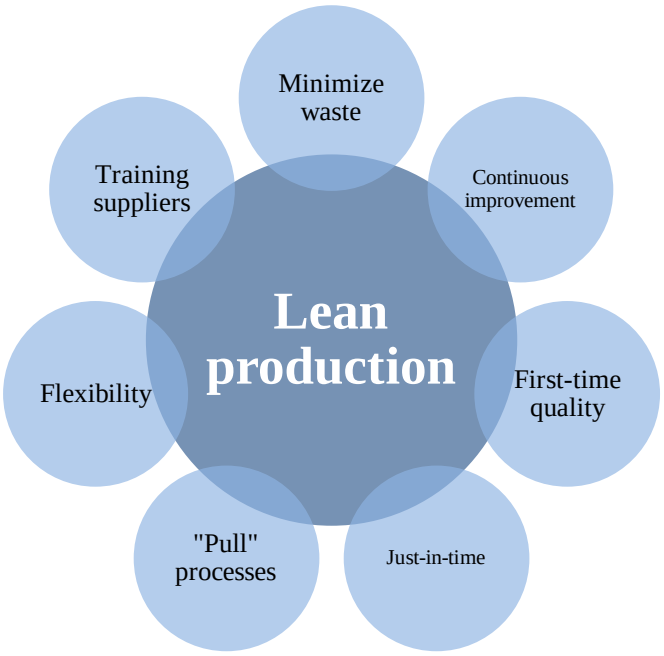

Figure 3.2: Basic principles of Lean production

1. *Minimization of waste*. Eliminating all activities that do not add value, implementing safety nets and optimal use of scarce resources. Waste is something that the customer is not willing to pay for and it should therefore be eliminated [35]. Figure 3.3 shows an example of process optimization where removing the waste that does not add value, reduces time and cost in a short period.

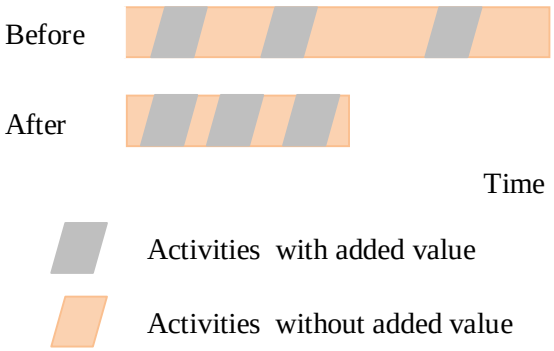

Figure 3.3: Process optimization

There are several efficient methods for waste reduction [35]:

- *Reducing inventory*: One important way of doing this is by minimizing 'down time' in machines through preventive maintenance. This allows for reduction in accumulated stock and efficiently meeting the product delivery time. Inventory reduction can also be achieved by reducing lot sizes and reducing set-up times.

- *Reducing transportation in manufacturing processes*: Try to eliminate the need for in-house transport. One way is trying to organise the machines in a cell-based layout with the aim of achieving a physical connection of the flow of products.

- *Improving quality:* Manufacturing parts and products that are defective and therefore need to be reworked is wasteful. Eliminating scrap and rework is the last determinant of the elimination of waste.

2. *Continuous improvement (CI):* CI is a particular bundle of routines which can help an organisation improve all of its current operations. Specifically, CI is the evolution and aggregation of a set of key behavioural routines within the firm. Building behavioural capability of this kind constitutes an important contribution to the resource base of the firm and one which it can deploy in pursuit of a variety of strategic goals such as lowering costs, improving quality, speeding response, etc. Thus, CI is about building a culture of change where every employee is motivated to seek improvements continuously in his working methods in accordance with the spirit of Lean [36].

3. *First-time quality:* Striving for zero defects in order to attain quality by detecting and resolving problems at their source. Thus, all parts and products are fault free from the very beginning. Below are listed the most important requirements for achieving perfect quality in the first time [35]:

- *Process must be kept under control:* With the aim of preventing defects from occurring, though discovering errors that can lead to defects.

- *Quality control must be the responsibility of everyone:* Identification of defective parts is not purely the responsibility of the quality control department, but it is also the responsibility of the worker. Additionally, responsibility for adjusting the defective parts is also delegated to workers

- *Control over the processes:* Use of statistical process control as tests after each process and monitoring of the process variables.

4. *Just-in-time:* This principle implies that each process should be provided with the right part, in the right quantity at exactly the right point in time. Thus, every process should be provided with one part at a time, exactly when that part is needed. In order to adapt oneself to a production model based on just-in-time, several factors such as reduction of lot sizes, reduction of buffer sizes and reduction of order lead time must be considered [35].

5. *"Pull" processes:* Products are pulled (in the sense of request) by the final user, not pushed by the end of production. Everything that occurs outside of this is considered overproduction. Therefore, only the production that is mailed to the customer must be planned. This prevents fill machines, equipment, and people in productions which demand is not immediate. Moreover, it also helps to reducing the size of the batch of manufacture and detecting and resolving any possible incident during the process [35].

Figure 3.4 shows the pull process. Firstly, the downstream operator pulls item "A", leaving an empty space in the inventory. This is a signal to replace the missing "A". Consequently, the upstream operator fills the open space with a new item "A".

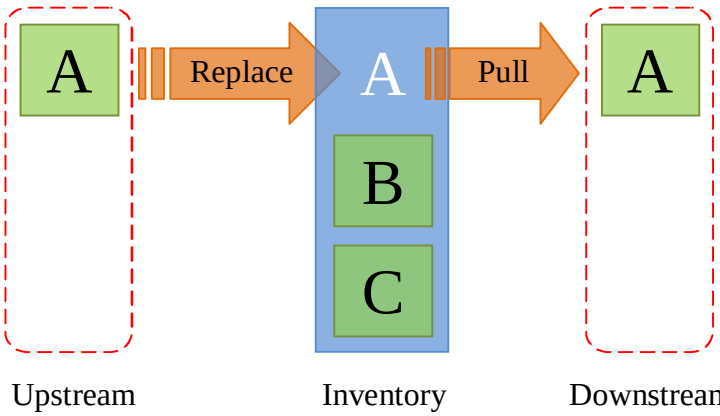

Figure 3.4: Pull process

6. *Flexibility:* This principle underscores the quick production of different mixtures of a large variety of products without sacrificing efficiency due to lower production volumes. Lean aims at providing the product or service required by the client in the amount proposed in the required moment. This requires a highly flexible production system [37].

7. *Training suppliers:* Building and maintaining a long term relationship with suppliers while sharing risk and cost information. Suppliers must be trained in ways to reduce setup times, inventories, defects, machine breakdowns etc., and take responsibility to deliver their best possible parts [37].

In summary, Lean production is basically concerned with getting the right things at the right place at the right time, in the right quantity while minimizing waste, being flexible and open to change [38].

3.3.3. Eco-design

Sustainable product design is the first step toward sustainable production. A green design includes several other considerations besides environmental factors. These factors include customer needs, the suppliers, the regulatory agencies, the employers and production compatibility. In fact, customers currently demand safer, cleaner and healthier products. This drives companies toward more efficient production and pushes them to increase the value of their products and consequently their competitiveness.

With the aim of meet this challenge, reformulation of its products is needed. This means to carry out proactive corrective action throughout the products' lifecycle, from obtaining raw material to the end of its useful life and subsequent disposal [39].

Eco-design refers to a product design process that incorporates environmental concepts into the design and product innovation process which companies employ. It considers the potential environmental impacts that a product can engender during its life-cycle and strives to minimize the negative impact by addressing these issues during the design stages of the product. Eco-design doesn't alter the basic steps of a process of product development, but it gives to these steps a new approach that takes into account environmental criteria. Therefore, eco-design adds new aspects to the steps that compose product development. There are several guidelines that can work in an eco-design project. Below are listed in what consist of each of these guidelines [39].

1. *Reduction of materials used and efficient use of energy and resource:* A useful way to minimise the materials used in products is to use a concept called dematerialisation [40]. Dematerialisation involves better use of raw material

throughout the production process. It also emphasises on using fewer raw materials in each product and increasing energy efficiency in their manufacture or use. Therefore, it is necessary to improve both the design of the industrial process and the product itself. Furthermore, this strategy seeks to achieve indirect environmental savings, resulting from reduction in environmental impacts of extraction, processing and transport of the material and the energy used in the manufacture of products [41].

2. *Elimination of most toxic materials associated with the product*: There are products whose composition may have toxic materials, or their manufacture might require toxic substances. Furthermore, these products may also cause environmental damage during their use. In order to solve this problem, one of the basic strategies used in eco-design is detoxification [40]. This strategy consists of minimizing the potential for adverse human or ecological effects at every stage of the lifecycle. This can be achieved through several techniques as:

    - Replacement of toxic or hazardous materials with benign ones
    - Use of cleaner technologies that helps to reduce harmful wastes and emissions
    - Waste modification through chemical, energetic or biological treatment

3. *Use of materials easy to clean, repair and reuse:* Material selection is a key stage for moving towards a greener design. The selection of materials for a product is of high importance, as the material determines the use environmental resources.

    The use of renewable materials is also an important consideration in product development. Renewable materials are materials which in a short time can be replenished naturally and usually have no or very little impact on the environment. Therefore, use of renewable materials helps in developing a greener product. Furthermore, technical lifetime, maintenance, service and repair of a product are other examples of areas, which are typically dependent on the material used for the product itself. The design should be done to make the materials easy and economically repairable. Finally, the materials used must be easily reusable without affecting the final product quality [41].

4. *Ease of dismantling:* In order to accommodate the easy dismantling of the used products, it is necessary to establish a modular structure of the products oriented not only towards manufacturing, but also towards disassembly for recycling or reuse. This is called design for disassembly [42]. This design includes the creation of new types of unions that allow easy separation of components, as well as the connections between different parts of material.

5. *Easy identification of different components to facilitate recycling:* One of the most important elements of eco-design is obtaining a design that provides a recycling strategy. This design has the dual aim of reducing non-recyclable items produced during the manufacture of the product and subsequently produced at the end of its life. This strategy is known as design for recycling and it focuses on maximum recycle-ability and a high content of recycled material in the product. Furthermore, different materials should not be mixed if not necessary and different parts should be labelled for easy materials separation [41].

6. *Partial or total reuse of products in the final stage of their lifecycle by the company:* Eco-design also requires that products should be designed for reuse. Parts and components have to be standardized as a measure to facilitate reuse. This is called design for reusability [43] and focuses on possible reuse of different components in a product. The reused parts could be refurbished and reused. Furthermore, this design also gives a high priority to repair against simple substitution [41].

Note that eco-design is based on a number of strategies some of them which depend on each other. For instance, to carry out the design of a product with components that are easy to recycle, it is necessary to remove toxic and hazardous substances, as well as adopt a modular manufacturing strategy increasing its ease of disassembly.

3.3.4. Sustainable performance measurement

As per the Brundtland report [1], the world is conceived as a global system whose parts are interrelated. It considers the concept of sustainable development as a process that affects economic, ecological and social systems. However, one of the biggest challenges has been the concerning the indicators that alert us on the direction of our progress (positive or negative) with respect to sustainability.

Only by focusing on measurable aspects of a company's environmental performance will proper attention be paid to progressing towards sustainable development. Therefore, a company's metrics must holistically address sustainability issues. An accurate measurement of sustainability initiatives will allow managers or decision-makers to identify the pros and cons of the current process. This will require new approaches in performance monitoring, financial appraisal and costing systems [14].

In order for sustainable development to become more than just a subjective aspiration and be transferred to practice, it should be defined with some precision. For this, the development model being pursued in the company must be examined with the aim of knowing if the company can be termed sustainable.

One way of measuring sustainable performance is by choosing a set of appropriate sustainability metrics and indicators. Sustainability indicators assist in assessing the progress made by a company in promoting sustainable development and they are usually expressed as ratios. The numerator includes current impacts as resource consumption, pollution effects and land use. The denominator contains measures of desired outputs such as production output and economic/social value added. Thus, the metrics follow a simple rule: the lesser the metric, the better the result [44].

The Global Reporting Initiative (GRI) [45] distinguishes between three categories of indicators: economic indicators, environmental indicators, and social indicators. Below are listed the indicators identified by the Global Reporting Initiative.

Economic indicators

Economic indicators capture all financial and accounting information, largely aimed at assessing the profitability of capital. However, the economic indicators of sustainability should also collect aspects like labour productivity, investment and economic relations with suppliers. The various aspects that economic indicators should collect are the following:

- Economic performance
    - Economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.
    - Financial implications and other risks and opportunities for the organization’s activities due to climate change.
    - Coverage of the organization’s defined benefit plan obligations.
    - Significant financial assistance received from government.

- Market presence
    - Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation.
    - Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.
    - Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation.

- Indirect economic impacts
    - Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.
    - Understanding and describing significant indirect economic impacts, including the extent of impacts.

Environmental indicators

The critical issues that must evaluate the environmental indicators are related to the impacts of the activity of the company in resource use and waste generation/pollution and the effects on human health and ecosystems. The indicator panel should refer primarily to the following:

- Materials
    - Materials used by weight or volume.
    - Percentage of materials used that are recycled input materials.

- Energy
    - Direct energy consumption by primary energy source.
    - Indirect energy consumption by primary source.
    - Energy saved due to conservation and efficiency improvements.
    - Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.
    - Initiatives to reduce indirect energy consumption and reductions achieved.

- Water
    - Total water withdrawal by source.
    - Water sources significantly affected by withdrawal of water.
    - Percentage and total volume of water recycled and reused.

- Biodiversity
    - Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.
    - Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.
    - Habitats protected or restored.
    - Strategies, current action, and future plans for managing impacts on biodiversity.

  - Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.

- Emissions, effluents, and waste
  - Total direct and indirect greenhouse gas emissions by weight.
  - Other relevant indirect greenhouse gas emissions by weight.
  - Initiatives to reduce greenhouse gas emissions and reductions achieved.
  - Emissions of ozone-depleting substances by weight.
  - NOx, SOx, and other significant air emissions by type and weight.
  - Total water discharge by quality and destination.
  - Total weight of waste by type and disposal method.
  - Total number and volume of significant spills.
  - Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.
  - Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff.

- Products and Services
  - Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.
  - Percentage of products sold and their packaging materials that are reclaimed by category.

- Compliance
  - Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.

- Transport
  - Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.

- Overall
  - Total environmental protection expenditures and investments by type.

Social indicators

The social indicators of sustainability within business include those relating to both internal and external matters of the organization. The social indicators identified by the Global Reporting Initiative are the following:

- Investment and procurement practices
    - Percentage and total number of significant investment agreements that include human right clauses or that have undergone human rights screening.
    - Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken.
    - Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.

- Non-Discrimination
    - Total number of incidents of discrimination and actions taken.

- Freedom of association and collective Bargaining
    - Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights.

- Child labour
    - Operations identified as having significant risk for incidents of child labour, and measures taken to contribute to the elimination of child labour.

- Forced and compulsory labour
    - Operations identified as having significant risk for incidents of forced or compulsory labour.

- Security practices
    - Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.

- Indigenous rights
    - Total number of incidents of violations involving rights of indigenous people and actions taken.

- Community
    - Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operation, and exiting.

- Corruption
  - Percentage and total number of business units analyzed for risks related to corruption.
  - Percentage of employees trained in organization's anti-corruption policies and procedures.
  - Actions taken in response to incidents of corruption.

- Public policy
  - Public policy positions and participation in public policy development and lobbying.
  - Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.

- Anti-competitive behaviour
  - Total number of legal actions for anti-competitive behaviour, anti-trust, and monopoly practices and their outcomes.

- Compliance
  - Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.

- Customer health and safety
  - Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.
  - Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes.

- Products and service labelling
  - Type of product and service information required by procedures and percentage of significant products and services subject to such information requirements.
  - Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by typed of outcomes.
  - Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.

- Marketing communications
  - Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.

  - Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.

- Customer privacy
  - Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.

- Compliance
  - Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.

Within the above framework, each company or organization should identify specific indicators that best reflect their progress towards sustainability. Finally, the important thing is to continually assess these indicators and improve them over time from the experience of the organization. It is important for a company to realise that sustainability is a commitment that combines economic, social and environmental concerns. Whichever is the center of gravity of the organization, the company should begin with operationalising sustainability indicators there, with the clear intention of making progress in all three directions [44].

4. Current situation of Spanish companies

This section begins by describing the landscape of the Spanish business sector from the perspective of the economy and employment. It also briefly summarizes the current economic situation explaining the current crisis which the county is experiencing and finally highlights the importance for achieving sustainable development in the Spanish companies.

4.1. Spanish business structure

Currently in Spain there are almost 3.3 million companies, of which only 4.95% shape the business network of SMEs and Large Companies of the State, while 95.05% are divided into micro-businesses with fewer than 10 employees. The following information was obtained from the annual survey conducted by the Spanish National Statics Institute based on data provided by the Central Business Directory on the 1st of January of 2010 [46].

Table 4.1 ranks the active companies in terms of two basic characteristics: the economic sector to which they belong and the range of employees assigned.

	Overall	Industry	Construction	Trade	Rest of services
OVERALL	**3.291.263**	**230.301**	**510.243**	**796.815**	**1.753.904**
One-Person Company	1.774.005	81.941	282.203	402.032	1.007.829
From 1 to 2 employees	893.005	60.592	125.797	245.578	461.038
From 3 to 5 employees	318.155	32.666	50.935	85.488	149.066
From 6 to 9 employees	143.016	18.625	22.537	36.682	65.172
From 10 to 19 employees	88.396	17.698	16.861	15.583	38.254
20 or more employees	74.686	18.779	11.910	11.452	32.545

Table 4.1: Enterprises by economic sector and interval of employees

The Services sector, excluding trade, holds the most weight in the structure of the business population. It represents 53.3% of the total. This sector includes all enterprises engaged in catering, transport and storage, information and communications, finance and insurance, real estate, scientific and technical, administrative and ancillary services, education, health and welfare and other social activities, including personal services.

Trade is also significant, accounting for 24.2% of the total. This section encompasses the firms operating in wholesale, retail sales and trade intermediaries. Finally, companies in the construction sector represents 15.5% of the total population,

while companies in the industry accounted for 7.0% of the total. Figure 4.1 shows the distribution of the percentages of the Spanish business structure by sectors.

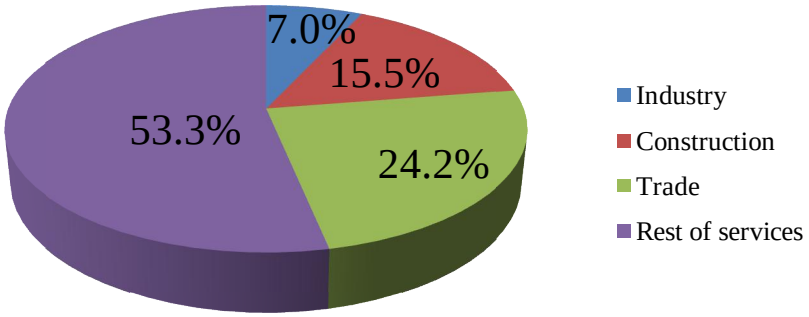

Figure 4.1: Spanish business structure by sectors

From the point of view of the size measured in number of employees, Spanish companies are characterized by their small size. According to the data of 1st of January of 2010, over 1.7 million companies did not employ any employees. These companies are called One-Person Company and they consist of on a single individual who chooses to go into business by himself. This represents 53.9% of the total as it shows in Figure 4.2.

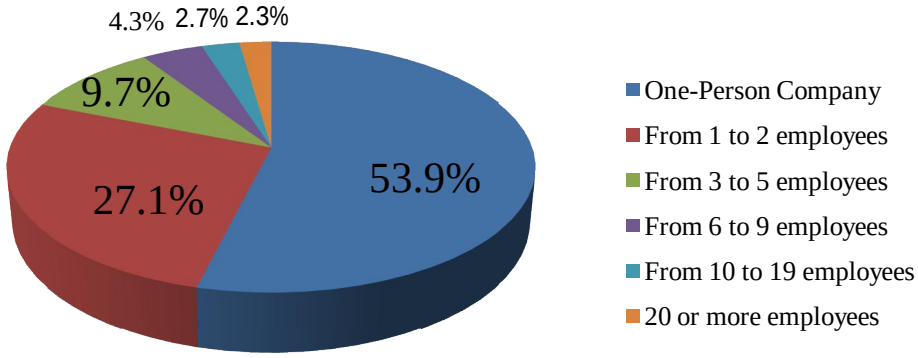

Figure 4.2: Spanish business structure by employees

In addition, other 893.005 companies, 27.1% of the total, have between one and two employees. Adding these two groups shows that more than 8 out of 10 companies have two or fewer employees. If we consider only companies with 20 or more employees, they represent 2.3% of the total.

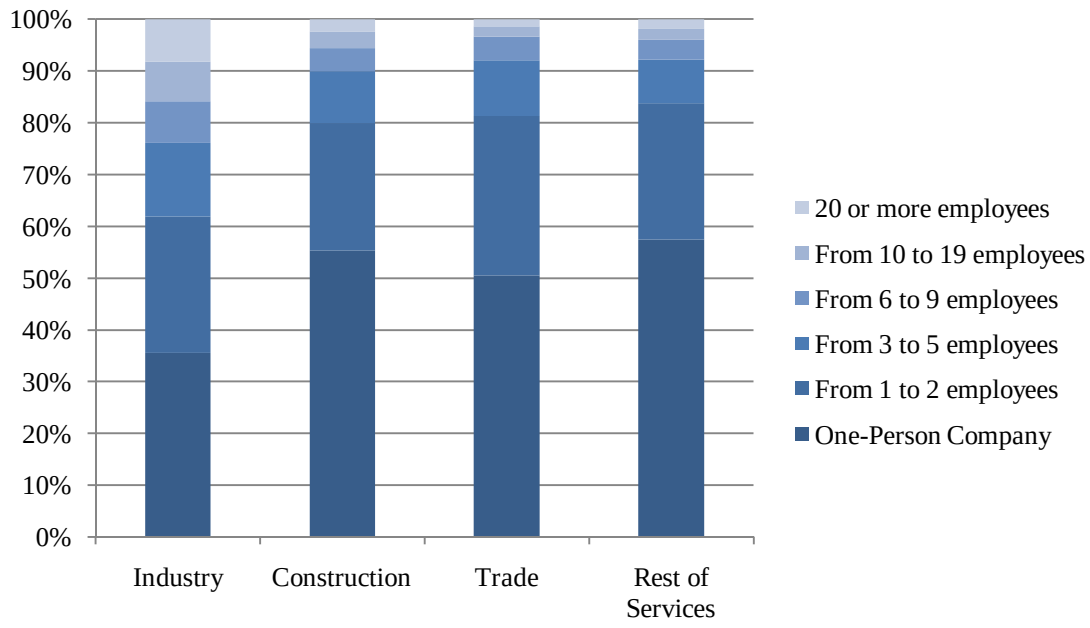

Figure 4.3: Percentages of businesses by sector and number of employees

The highest percentage of small businesses are in services sectors (83.7% have two or less employees) and trade (81.3%). By contrast, the weight of large firms is concentred in the industrial sector, where 8.2% of total employs 20 or more employees. Figure 4.3 shows the percentages of businesses by sector and number of employees.

4.2. Current economic situation

Europe is facing a global crisis that transcends and is also a consequence of dominant model of civilization since economic analysis it is not a temporal accident and not even comparable to other previous crisis. We are at the end of a long wave which is settled conditions for deepening the crisis, opening the comeback, or challenging to change the socioeconomic model [47].

The Spanish economy is going through an economic crisis that began at the start of 2008 and even nowadays continues. This depression can be seen in the negative growth of economic activity, an increase in unemployment, the collapse of the property construction sector and a reduction of the industrial production index [48].

In Spain, the contextual factor determining driver of the crisis is the structural condition of the Spanish economy. Submission to the rules of the EU bloc (market and single currency, central bank policy which prioritizes the interests of core countries, the Stability Pact, etc.) damage countries like Spain, with less industrial and market power, and located in cycles of auxiliary capital in the European context. The investment and

production grew between 1995 and 2007 for individual and situational reasons. The intensive Spanish growth model was held under the extension of low-cost employment, insecurity and limited rights in what has been trapped a large majority of youth, women and, above all, immigrants who joined substantially over the last fifteen years under very vulnerable conditions [47].

Additionally, private investment grew in construction activity and tourism where exceptional circumstances existed for the business. But once the tour of these markets was exhausted by overproduction and the growth expectation was closed, a drag effect ensued, adding to the foundation of the international systemic crisis to the rest of the economy which has intensified the depressant effects. The structural crisis thus coincides with a regular industrial crisis, in this case, by saturation of markets (by overproduction in the construction and automobile); later by all fall in consumption in the trade, and finally combined in tourism [47].

Figure 4.4 shows the annual evolution of overall Spanish companies. Since 2000 the number of active companies has grown significantly reaching the figure of 3.422.230 in 2008, an increase of 31.9% compared to 2000. However, reflected in the graph, we see the beginning of the crisis in 2008.

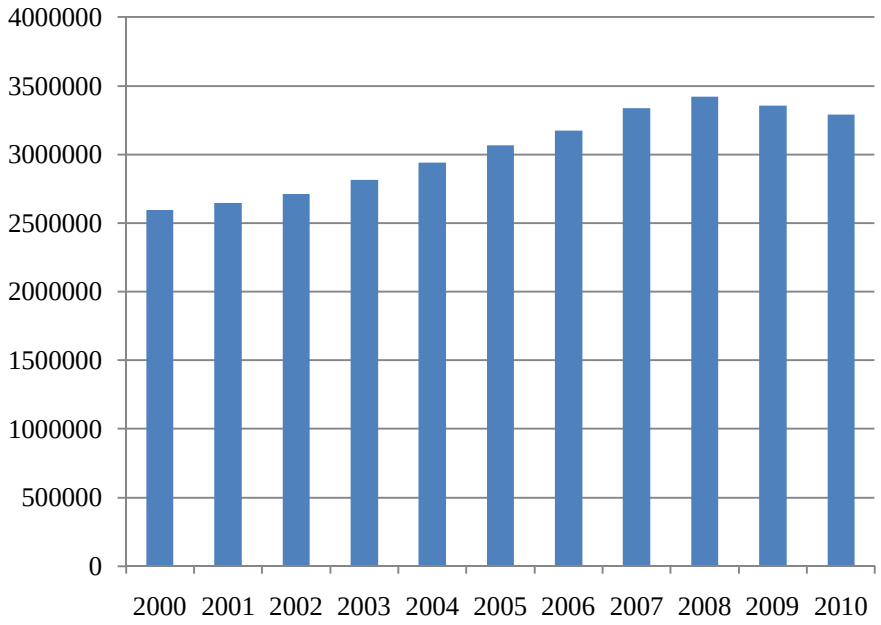

Figure 4.4: Annual evolution of overall Spanish companies [50]

Despite the current crisis, Spanish companies expect to improve key aspects of their business in 2011 (turnover, profits, exports and investments). However they maintain a pessimistic view on the evolution of the Spanish economy and employment and do not reflect a possible short-term recovery according to the International Business

Report study of Grant Thornton [49]. This study reveals that 44% of Spanish companies expect to increase its turnover in 2011, mainly thanks to foreign markets, and 38% trust that they will even improve their profitability. On the other hand, only 15% of the companies predict that this year will continue to decline which confirms the slightly positive trend starting in 2010.

Indeed, Figure 4.5 shows the accuracy of these results, since according to data provided by the National Institute of Statics of Spain [50], while the index of production in the manufacturing industry presents a sharp decline between 2008 and 2009 (decrease in 17%) and kept low between 2009 and 2010, the index of turnover has increased by 6% in 2010 compared to 2009.

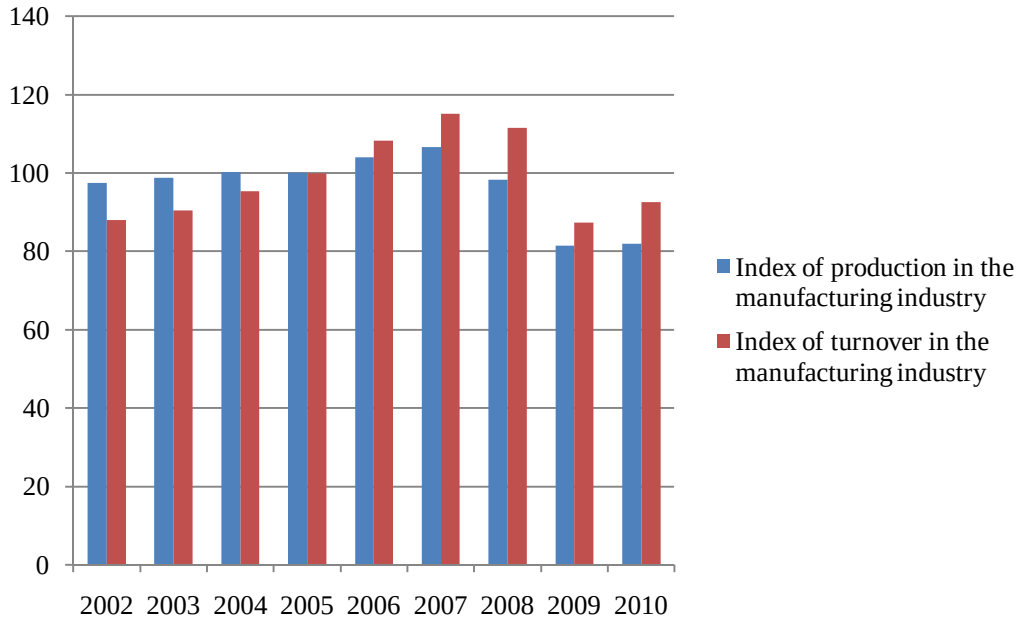

Figure 4.5: Annual indices of production and turnover in the manufacturing industry

However these improvements do not translate directly into a direct increase in job offers, as most companies expect to maintain staffing levels of the last year and those planned downsizing still outweigh those who will create jobs in 2011. Thus 23% of businesses think they have to cut jobs, while only 18% expect to create jobs during 2011. The majority opinion (58%) is that recruitment will remain stagnant at 2010 levels but a significant percentage expects to increase employment (20%).

Therefore, it seems that a definitive recovery in the labour market is still to come. With respect to forecasts of business investments, recent trends have shown the first encouraging signs but are still far from the pre-crisis levels.

4.3. Sustainable development in the Spanish companies

One of the most important challenges facing sustainable development is the integration of environmental components into existing production systems in order to make better use of resources and to lower the generation of pollutants.

The application by the companies of Environmental Management Systems is one way to enable this development which is unlike other existing roads (tax and environmental laws). Its implementation is voluntary which is an indicator of the level of business commitment to environmental protection, although in many cases, it is driven by a quest for greater competitiveness.

ISO 14001 is the environmental management tool most widely used in the world. According to the World Report of ISO [51], at the end of 2009, 223.149 Environmental Management Certificates in 159 countries around the world were counted.

This certificate certifies that the organization complies with the requirements of ISO 14001 and has implemented an Environmental Management System that helps to prevent environmental impacts. Necessary means, in other words, are used to prevent, reduce or control systems but always in balance with socioeconomic rationality betting on continuous improvement. The advantages of an Environmental Management Certificate are numerous but can be summarized into three broad categories: minimizing environmental impacts arising from the activities of the organization, with a systematic approach, which means continuous improvement; economic benefits obtained by the optimization of energy consumption, raw materials and water as well as by improving processes and reducing legal risks [52].

Spain is ranked first in Europe and third in the world by the number of certificates of the Environmental Management System ISO 14001. This was revealed by the International Organization for Standardization (ISO) in its latest report that shows the global classification for certification. According to an ISO Survey in 2009 [53], Spain leads the European awards list with 16527 awards, consolidating this leading position for five years. Furthermore, Spain is the third country in the world by number of certificates. Figure 4.6 shows the annual Spanish growth of ISO 14001 certificates. Spain presented a proportional increase of 30% every year compared to 2005. In contrast, during the year 2009, certification only rose a paltry 1% compared to 2005 because of the economic crisis starting in 2008.

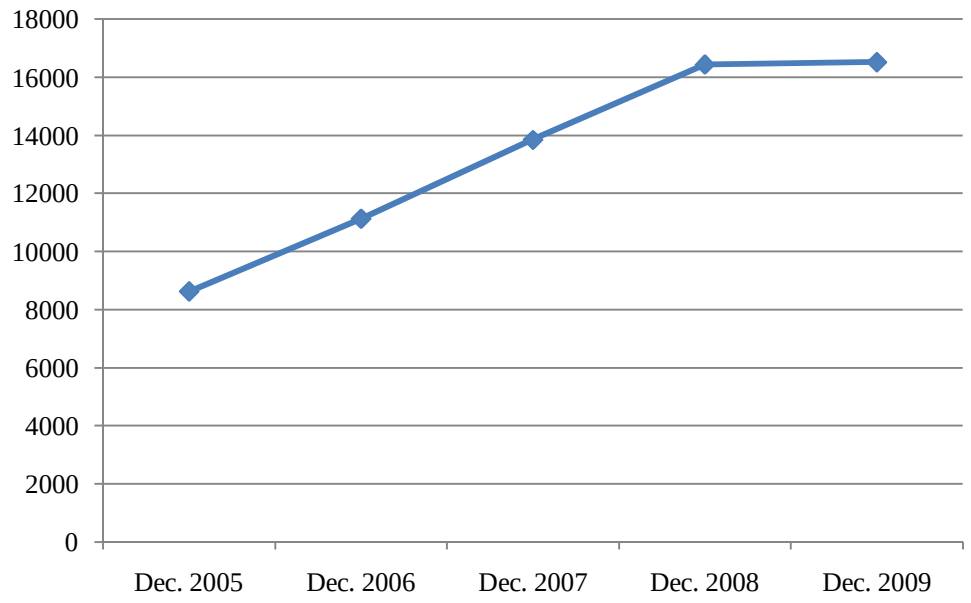

Figure 4.6: Annual Spanish growth of ISO 14001 certificates

The economic structure and the productivity shows the need for restructuring to overcome the glaring weaknesses of current standard modern Spanish economic growth, diversifying the economy toward an innovate model, competitive and friendly to the environment and enhancing natural capital.

Although Spain is currently still maintaining the first position in the ranking in regards to certificates of ISO 14001, the current business model is unsustainable in terms of environmental, economic and social awareness. The main challenges for the sustainability of this model are: reducing energy intensity, reducing consumption of fossil fuels, reducing greenhouse gas emissions, security of energy supply of EU countries and getting access to modern energy services to more than 2 billion people lack thereof. Spain's convergence in such a model of sustainable energy consumption in developed countries would contribute to the contraction of its energy demand [2].

Energy is an essential part of life and its use satisfies human needs while generating industrial, commercial and social wealth. On the other hand, the production and consumption of energy exerted significant pressures on the environment as emission of greenhouse gases and other pollutants, land use, waste generation and oil slicks. These factors contribute to climate change, degradation of air quality, damage ecosystems, affecting the environment and producing adverse effects on human health [2].

Spain has, for three decades, been progressively increasing in energy consumption and energy intensity. The excessive dependence on foreign energy and the need to preserve the environment and ensure sustainable development requires the

innovative, new formulas that allow more efficient use of energy and encourage the use of cleaner sources. Therefore, a substantial increase in renewable energy sources (e.g. solar, wind hydro, geothermal, biomass), supplemented by a considerable improvement in energy efficiency should be of a strategic importance. An approach encompassing environmental, economic and socials scales are necessary to fulfil international commitments to the environment. Thus, the companies must participate actively in the establishment of the best available techniques from the environmental point of view. It is an enormous environmental and technological challenge for the Spanish industry to be an instrument that allows gradual adjustment to the best available techniques, requiring a transformation into a more competitive industry that respects the environment [2].

The Observatory of Sustainability in Spain conducted an analysis which suggests that the Spanish Sustainable Development Strategy [2] should be enhanced and more focussed towards the opportunities that arise with the change in the economic cycle. This involves a more inclusive approach of other policies to guide the model production and consumption to a sustainable economy in order to generate green jobs.

In conclusion, several Spanish agencies are designing various strategies with regards to sustainable development and sustainable production and some Spanish companies are already in sympathy with those actions (e.g. obtaining ISO 14001 certificates). However, efforts to put them into practice and adapt them as common lifestyles in such companies should be much higher if they want to achieve an optimal and almost ideal level in terms of sustainability.

5. Research methodology

This section describes the research methodology adopted in the development of this study. Firstly, an overview and the phases of the research project are presented. This section also describes which population and sample were selected as well as the researcher instruments used and the procedure for data collection and then the approach methods and data used in evaluating the study are presented. Finally, the method for the data analysis is presented.

5.1. Overview and phases of the research project

The research project can be divided into the following four phases:

1. *Literature review.* Firstly, a background and framework regarding to sustainable development was studied with the aim to find out the basics of the idea of sustainable development, as well as some best practices that helps companies move toward sustainability.

2. *Questionnaire design.* Also, a questionnaire was designed on the basis of a literature review. The questionnaire focused on the current situation, opportunities and challenges of sustainable development, and it is based on an earlier study focusing on trends and possibilities of creating a sustainable future.

3. *Surveying companies.* Subsequently, surveys to the Spanish companies were conducted. These aimed at collecting information about what the companies think about sustainable development at a firm level and what they do to handle it. For this, sample design was taking into account with the aim to determinate what type of information is needed and who is most likely to have it.

4. *Evaluation of results.* Finally, the results of the Spanish Survey are presented and analyzed. These results are also compared with other results of an earlier study and finally some guidelines and ideas are presented with the aim to help companies moving towards sustainable development.

5.2. Method of data collection adopted

There are two different types of data: primary data and secondary data. Primary data refers to information collected for the first time; secondary data are those which

have already been collected and analysed by someone else. In this study, both types are used.

To give an answer to the first objective mentioned below, the survey method was used based on a previous survey designed by the American Management Association [54]. In this study, the survey method was used because is the most suited for gathering descriptive information. The survey used was a structured one based on formal lists of questions asked of all respondents in the same way. Direct approach was adopted asking direct questions about behaviours and thoughts. Surveys have several advantages as can be used to collect many different kinds of information and the quick and low cost as compared to observation and experimental method is also beneficial. However, this survey method also has limitations as the respondent's reluctance to answer questions asked by unknown interviewers about things they consider private; busy people may not want to take the time, may try to help by giving pleasant answers, are unable to answer because they cannot remember or never gave a thought to what they do and why, or may answer in order to look smart or well informed. To overcome these limitations, the name of the company in the questionnaire is not compulsory so this allows the companies to be more honest with their answers. Also, the tool used to collect data discussed in detail in section 5.4., allows respondents to answer question more comfortably.

Information may be collected by several methods as email, telephone and personal interviewed. To collect data in this study, the mail was selected as the most suitable contact method for the advantages that offers. Furthermore, the study was developed in a different country where the results come from so mail survey greatly facilitated this task. Mail questionnaire has several advantages as can be used to collect large amounts of information at a low cost per respondent. Furthermore, respondents may give more honest answers to personal question on a mail questionnaire because there isn't interviewer involved to bias the respondent's answers. Another important advantage is the convenient for respondent's who can answer when they have time so it is also a good way to reach people who often travel. However, mail questionnaire also has various limitations as it takes longer to complete than telephone or personal interview and the researcher has no control over who answers. Although, the biggest limitation of this contact method consists in response rates is often very low.

5.3. Sample design

The first step in sample design is determinate what type of information is needed and who is most likely to have it. The main aim of this study is to get information of the Spanish companies about their modus operandi toward sustainability and what they think about this issue. The first idea was to get information about Spanish companies

that are based in production so a final tangible product was delivered to the customer. However, the final decision was to get information of all the Spanish companies regardless of the type of sector to which they pertain and that was done for two principle reasons. The first reason is the difficulty to get data only of the companies based in production because in Spain they represent only 7% of the total number of companies, which means the difficulty presented to get information about them. Although the weight of large firms is concentrated in the industrial sector (where 8,2% of total employs 20 or more employees), the rest of the sectors as services, trade, and construction have been considered as they represent the biggest percentage of Spanish companies, taking into account that two of them (trade and services) offer only a service as a final product.

The questionnaire was sent to approximately 150 Spanish companies. A probability sample was used as every member of the population has a known and equal chance of being selected, so we can say it is a simple random sample. However, this method implies a low amount of answers from the companies randomly selected that is why, in this study, a non probability sample was used as well. The researcher selected the easiest population members from which to obtain information using potential contacts. Finally, the sample size consists of 40 respondents from 36 different Spanish companies.

5.4. Tool for data collection

A questionnaire survey was used to collect the data. The questionnaire focused on the current situation, opportunities and challenges of sustainable development, and it is based on an earlier study focusing on trends and possibilities of creating a sustainable future, carried out by the American Management Association [54]. The main reason for and benefit of using the same questionnaire is the possibility of comparison between the two studies and sets of data. The questionnaire is divided into different main questions regarding to the research questions mentioned below. The sustainability-related questions of the questionnaire asked the respondents to rank or evaluate on a 1 to 5 scale. However, the first pack of questions refers to the background information of the company based on closed-ended question, without providing quantitative data. The second battery of questions refers to general information and those questions were provided by the Department of Production of TUT.

To provide the necessary information about how the questionnaire operates and the need for respondents' help with their answers, a cover letter was sent to all of them. The structure of this questionnaire is based in a Google spreadsheet because the way of collecting data is easier as it is not necessary to send the questionnaire back manually.

This tool offers specific online benefits as sharing spreadsheet documents, online storage, and shared, and real time editing over the Internet.

All information that the companies provide though their participation in this study will be kept confidential. Further, they will not be identified in this thesis or in any report or publication based on this research. In fact, the name of the company is not compulsory so it is up to the companies to provide it or not.

5.5. Data analysis and interpretation

The data is presented in two different ways. The background information was presented by percentages (age, gender, size of companies, current function and current title).The data collected from the sustainability-related questions evaluated on a 1 to 5 scale was presented by the calculation of the arithmetic means of each question of the questionnaire.

For clarity, the calculated averages were represented in tables. This method allows obtaining rankings of various issues from the most important to the least. The American Management Association also used this method to present their results. There is one table for each question. Each table contains the different issues to rate, including the rank and the mean of each issue. The tables also contain the results of the Spanish Sustainability Survey and the results of the American Management Association Survey as this makes it easier to compare the results of both surveys. Note that the first pack of sustainability-related questions (general issues of sustainability) only presents the results of the Spanish Survey as the AMA Survey did not include these questions in its study.

The analysis of the background information was carried out by a simple description of the different percentages obtained. On the other hand, the analysis of the sustainability-related questions is, by contrast, a bit more complex. Firstly, the results of the Spanish Survey are presented and analyzed. The highest and lowest scores from the table are analyzed in detail and conclusions are extracted in order to discover weak points of the companies regarding to sustainability. After that, the results of both surveys are compared with the aim of finding out which companies follow sustainability criteria to a higher level in their modus operandi. Finally, to procure a wider overview of the current situation, a summary with some key findings was included at the end of the analysis.

6. Results and analysis of the study

This chapter presents the analysis and results of the study focusing on objectives, enablers and barriers of sustainability perceived by Spanish companies. The results were obtained from the *Spanish Sustainability Survey*, provided to 40 Spanish companies of different sectors. The tables show the averages of the results of the 2007 AMA/HRI Sustainability Survey [54] in comparison with the Spanish Sustainability Survey in order to compare the results of both surveys.

The Spanish Sustainable Survey is divided into two different parts. Firstly, general background questions such as job function, gender, age, and size of the organization were asked to the respondents in order to understand the exact profile and the professional role they serve in their companies. Then, based on the structure of the *2007 AMA/HRI Sustainability Survey*, more specific issues, e.g. corporate practices of sustainability, qualities and enablers of sustainable development, sustainable items for business decisions, as well as barriers to sustainability are presented and discussed.

6.1. General background

Table 6.1 illustrates that more than half of the respondents (52.5%) are between the ages of 25 to 35. More than a quarter of the respondents, 27.5%, are 24 years old or younger, while only 20% are older than 36 years old (10% from 36-45, 7.5% from 46-55, and 2.5% are 56 or older. On the other hand, the majority of respondents (72.5%) are male, while only 27.5% are female (see Table 6.2).

What is your age? (by percent)	
Response	***Overall***
24 or younger	27.5 %
25-35	52.5
36-45	10
46-55	7.5
56-plus	2.5

Table 6.1: Age of respondents in %

What is your gender? (by percent)	
Response	***Overall***
Female	27.5 %
Male	72.5

Table 6.2: Gender of respondents in %

Regarding to the company size, the majority of respondents (65%) are employed at companies with less than 100 employees. More than a quarter of respondents are employed at companies with 100-9999 employees, while 7.5% of respondents are employed at large companies, i.e. 10000 or more employees (see Table 6.3).

What is the size of your organization's workforce? (by percent)	
Response	***Overall***
Under 10	27.5 %
From 10 to 29	17.5
From 30 to 49	5
From 50 to 99 employees	15
From 100 to 499	17.5
From 500 to 999	5
From 1000 to 9999	5
10000 or more	7.5

Table 6.3: Size of the companies in %

Table 6.4 shows the current function of the respondents in the company. Half of respondents indicated that they carry out their work in the operations field. Operations, here, refers to developing tasks within the production chain. The 17.5% of respondents work as general managers, developing tasks of several profiles. The last 37.5% is divided into the finance, research and development, and sales departments (12.5% each one).

In what function do you currently work? (by percent)	
Response	***Overall***
Finance	12.5 %
General management	17.5
Operations	50
Research and development	12.5
Sales	12.5

Table 6.4: Current function of respondents in %

What is your currently title? (by percent)	
Response	***Overall***
CEO/President/Chairman	5 %
Director	10
Manager	20
Supervisor	5
Other	60

Table 6.5: Current title of respondents in %

More specifically, almost a quarter of survey respondents identified themselves as performing the job functions of a manager (20%). On the other hand, only 5% of

respondents identified themselves as a President and 10% identified themselves as a Director, while 5% indicated they are employed as a Supervisor. However, the majority of respondents (60%) selected “Other” to identify their job function. A variety of other job functions were identified including: Consultants, Sales and Account Manager (see Table 6.5).

6.2. General issues of sustainability

The following claims and issues were included in the survey in order to understand the general background regarding companies’ current practices in regards to sustainability. Table 6.6 shows the average degree to which companies take into account several issues regarding sustainability from 1 to 5, with a 1 rating designated as “not realized or implemented” and a 5 rating “fully realized and implemented”.

The Spanish companies follow the development and changes in their customers’ needs and requirements related to sustainable development to a moderate extent (mean of 3.30); however, it is ranked first in the list. With smaller but still significant means in their rating, considering sustainable development in their sourcing and procurement decisions as well as considering principles and requirements of sustainable development were seen as important issues to the respondents. The companies also agree to a moderate extent that sustainable development provides their company new and/or additional business opportunities. Finally, the respondents said that their companies utilise sustainability in their products in sales and marketing and they design the products based on principles of sustainable development to a slightly below moderate extent (mean of 2.63). Furthermore, they affirmed that sustainable development has little effect on their logistical decisions.

On a scale from 1-5, evaluate and rate the realization and implementation of the following claims and issues in your company		
Issues	***Spanish Survey***	
	Rank	***Mean***
We actively follow the development and changes in our costumers need and requirements related to sustainable development	1	3.30
We consider sustainable development in our sourcing and procurement decisions	2	2.98
Principles and requirements of sustainable development are considered and taken into account in our production and operations	3	2.95
Sustainable development provides our company new and/or additional business opportunities	4	2.93
We utilise recyclable packages and materials in our deliveries, purchases and procurement	5	2.90
Our marketing and reporting emphasises and utilises sustainable development	6	2.83
After sales is an important part of our business	7	2.80
We utilise sustainability in our products in sales and marketing	8	2.68
We design our products based on principles of sustainable development	9	2.68
Sustainable development has an effect on our logistical decisions	10	2.65

Table 6.6: Claims and issues realized and implemented in the companies
Mean responses on a 5-point scale, where 1 = not realized or implemented and 5 = fully realized and implemented

In general, the polled Spanish companies do not implement the claims and issues mentioned above to a great extent. This can be accounted for due to two different reasons. Firstly, they may know some advantages attributed to sustainable development but lack the ambition to realize these goals. Secondly, they simply are unaware of what sustainable development can offer their company. Companies may make efforts to fill this knowledge gap and begin understanding the possible advantages of sustainable development. One example, in the table, is the issue: sustainable development provides our company new and/or additional business opportunities. Although it is ranked fourth in the list, the respondents gave it a mark of only 2.93 out of 5. Trying to seek out these business opportunities might be the starting point of moving towards the realization of sustainability.

On the other hand, the surveyed respondents of the Spanish companies design products based on principles of sustainable development to a slightly below moderate extent (mean of 2.68). Hence, there is room for improvement in this field. They may implement some sustainable practices related to product design, i.e. Design for Environment. Although a very important aspect to improve the Spanish companies' sustainability, design should not be the only area of focus, but rather all the different aspects commented above.

6.3. Specific corporate practices of sustainability

The Spanish Sustainability Survey also looked at the number of practices related to sustainability. Table 6.7 shows the average degree to which companies conduct

practices in instances that reflect and support sustainable strategies on a scale from 1 to 5, with a 1 rating designated as “not at all” and a 5 rating “to a very great extent”.

The respondents of the Spanish Survey reported that their enterprises were engaging in two practices to a high extent: ensuring ethical accountability and ensuring employee health and safety (overall means of 4.28 and 4.20, respectively). Both practices are related from the social perspective. They also perform several other practices to at least a moderate extent, including employee involvement in decisions, improving promoting work/life balance, improving energy efficiency and engaging collaboratively with community and non-governmental groups (overall means of 3.50, 3.45, 3.38 and 3.28, respectively). Ranked the fifth most important practice is improving energy efficiency, while reducing greenhouse emissions is the eleventh rated issue. On the other hand, providing employee training and development related to sustainability occupies the eighth position and it is implemented in a moderate extent (mean of 2.88).

The results reveal that the four highest rated practices were related to social issues. More specifically, they are directly related with the well-being of the employees. The Spanish companies care more about social issues than conducting practices related directly with the environment (i.e. improve energy efficiency) or with the education of sustainability (i.e. providing employee training related to sustainability). Finally, establishing indicators to determine if the organization is meeting sustainability goals is positioned in the lowest part of the table with a mean of 2.50.

In total, the overall conclusion drawn is that the Spanish companies may engage in sustainability practices to a greater extent, at least, the ones related directly to the environment. Specially, they may make some improvements to carry out the practices ranked in the lowest part of the table, such as introduce sustainability-related criteria in the several processes of the companies as well as establishing indicators to determine if the organization is meeting sustainability goals.

On a scale from 1-5, to what extent does your company have practices in place to do the following?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Ensure accountability for ethics at all levels	1	4.28	2	3.95	+ 0.33
Ensure the health and safety of employees	2	4.20	1	4.02	+ 0.18
Involve employees in decisions that affect them	3	3.50	6	3.28	+ 0.22
Support employees in balancing work and life activities	4	3.45	4	3.35	+ 0.10
Improve energy efficiency	5	3.38	10	3.06	+ 0.32
Engage collaboratively with community and non-governmental groups	6	3.28	3	3.47	- 0.19
Highlight our commitment to sustainability in our brand	7	2.98	9	3.12	- 0.14
Provide employee training and development related to sustainability	8	2.88	7	3.26	- 0.38
Encourage employee volunteerism	9	2.85	5	3.29	- 0.44
Get groups across your organization that are working on sustainability-related initiatives to work more closely together	10	2.65	12	2.85	- 0.20
Reduce greenhouse gas emissions	11	2.60	16	2.64	- 0.04
Work with suppliers to strengthen sustainability practices	12	2.58	11	2.95	- 0.37
Use sustainability-related criteria in promotion and career advancement	13	2.55	15	2.75	- 0.20
Link sustainability-related criteria to compensation	14	2.53	17	2.53	0
Use sustainability-related criteria in recruiting and selection	15	2.50	13	2.81	- 0.31
Establish indicators to determine if the organization is meeting sustainability goals	16	2.50	14	2.75	- 0.25

Table 6.7: Used sustainability related practices
Mean responses on a 5-point scale, where 1 = not at all and 5 = to a very great extent

Both the Spanish companies and the AMA Sustainability Survey respondents reported that their organizations ensure accountability for ethics as well as health and safety of employees to a high extent, with the Spanish companies achieving the greater extent (differences of 0.33 and 0.18, respectively). Furthermore, it seems that the Spanish companies implement practices to enhance the well-being of the employees and improve energy efficiency to a greater extent than the respondents of the AMA survey. By contrast, the respondents of the AMA survey indicated that their companies follow the rest of the practices of the list in a greater extent compared with the Spanish companies.

The smallest difference between responses in the Spanish and the AMA survey was for linking sustainability-related criteria in recruiting and selection (difference of 0.00), although this practice is implemented in a slightly below moderate extent (2.53 for both surveys). On the other hand, encouraging employee volunteerism had the greatest difference, 0.44. It is ranked ninth for the Spanish Survey and is ranked fifth for the AMA survey. This means that implementing this practice is more important for the companies within the AMA survey than for the Spanish companies.

Finally, the results revealed that the Spanish companies are following more specific practices to enhance the well-being of the employees to a greater extent. By contrast, the respondents of the AMA survey look out for a better balance of practices

implemented, taking into account issues from different perspectives, such as environmental and social related aspects.

6.4. Important issues to achieve sustainability

Striving to understand mutual concerns, the Spanish Sustainability Survey includes a list of sustainability-related issues indentified by the American Management Association in order to find out the importance of these issues with respect to the Spanish companies. Table 6.8 shows the importance of several sustainability-related issues to the companies on a scale from 1 to 5, with a 1 rating designated as “not at all” and a 5 rating “very important”.

The Spanish Sustainability Survey shows, in fact, that companies tend to embrace sustainability-related values to a fairly high degree. The respondents of the Spanish Survey emphasized the importance of six sustainability-related issues to a high extent: safe and healthy work environment, clean water, business ethics and integrity, worker job security, human right abuses and affordable clean energy (overall means of 4.05, 4.03, 3.95, 3.95, 3.80 and 3.80, respectively). In the “top six” list, we only find two environmental issues: clean water and affordable clean energy (ranked second and sixth in the list, respectively). It seems that, among sustainability-related issues, workforce issues tend to be seen as driving key issues to a greater extent than environmental issues. In addition, the Spanish companies saw an importance of other issues of the list to a moderately high extent with values raging from 3.48 for world population growth and poverty and homelessness (ranked the last ones) and 3.75 for well-being of employees (ranked the seventh in the list). Climate change is ranked tenth with a mean of 3.53, considered moderately important but not ranked as one of the most important issues. This is one of the most important issues that must be taken into account because of the recent increase of publicity of the issue. The Spanish companies not only have to take into account the importance of this issue, but have to make more efforts to prevent climate change. Finally, the respondents saw the importance of the rest of the issues to a moderate extent, such as right to collective bargaining, diverse ecosystem, epidemics and open immigration (overall means of 3.45, 3.25, 3.10 and 3.08, respectively).

In general, the Spanish companies consider the sustainability-related issues commented above quite important (mean of means of 3.62), although the workforce-related issues are considered the most important issues.

On a scale from 1-5, how important are the following sustainability-related issues to your company?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Safe and healthy work environment	1	4.05	2	4.31	- 0.26
Clean water	2	4.03	7	3.67	+ 0.36
Business ethics and integrity	3	3.95	1	4.46	- 0.51
Worker job security	4	3.95	8	3.57	+ 0.38
Human rights abuses	5	3.80	10	3.46	+ 0.34
Affordable clean energy	6	3.80	9	3.50	+ 0.30
Well-being of employees	7	3.75	5	3.87	- 0.12
Affordable quality health care	8	3.68	4	4.00	- 0.32
Assistance after natural disasters	9	3.63	6	3.73	- 0.10
Climate change	10	3.53	15	3.13	+ 0.40
Safe and reliable food resources	11	3.50	12	3.38	+ 0.12
Corruption in all its forms	12	3.50	3	4.24	- 0.74
World population growth	13	3.48	18	2.85	+ 0.63
Poverty and homelessness	14	3.48	13	3.17	+ 0.31
Right to collective bargaining	15	3.45	17	2.92	+ 0.53
Diverse ecosystem	16	3.25	14	3.14	+ 0.11
Epidemics	17	3.10	11	3.42	- 0.32
Open immigration	18	3.08	16	2.97	+ 0.11

Table 6.8: Importance of sustainability-related issues to the companies
Mean responses on a 5-point scale, where 1 = not at all and 5 = very important

Comparing both surveys, the Spanish Sustainability Survey respondents regarded a safe and healthy work environment as the most important sustainability-related issue. On the other hand, the AMA Sustainability Survey respondents reported that business ethics and integrity is the most important sustainability-related issue, while it is ranked third for the Spanish companies with a significant difference of 0.51. A safe and healthy work environment is ranked as the second most important issue in the AMA Survey list (mean of 4.31). Even though it is the most important issue for the Spanish companies, the mean is lower, 4.05.

The smallest difference between responses in the Spanish and the AMA survey was for the assistance after natural disasters (difference of 0.10), as it is seen as quite an important issue (3.63 and 3.74, respectively). On the other hand, corruption in all its forms had the greatest difference, 0.74. It is ranked thirteenth in the Spanish survey. However, this issue is seen as more important for the respondents of the AMA survey with a mean of 4.24 and ranked third in the list.

Finally, the results show that the Spanish companies consider environmental issues more important than do the respondents of AMA survey. For instance, clean water, affordable clean energy and safe and reliable food resources are ranked higher for the Spanish companies (overall differences of 0.36, 0.40 and 0.12, respectively). On the

other hand, the respondents of AMA Survey are more focussed on workforce-related issues and the greatest value for an environmental issue is 3.67 for clean water, ranked seventh overall on the list.

6.5. Qualities and enablers of sustainable development

When it comes to guaranteeing a sustainable businesses future, a certain set of skills and qualities must be considered. The organizations need business sustainability qualities in order to change their "modus operandi". Table 6.9 and Table 6.10 show the average of how important specific qualities of sustainable enterprises are and specific company ratings on a scale from 1 to 5, with a 1 rating designed as "not at all" and a 5 rating "very important and to a great extent".

The Spanish companies considered to having deeply held corporative values consistent with sustainability as the most important quality of the list. The mean response was 3.80 over 5 (see Table 6.9). This fundamental attitude must be firmly rooted in the company's corporate history and philosophy of action. Furthermore, the respondents of the Spanish survey show how important top management support is to the creation of a sustainable enterprise (mean of 3.75). It consists in the commitment assumed by the senior management of a company to contribute to sustainable development through collaboration with employees, local community, and society, in order to improve the quality of life. It is, in fact, the second most important quality, according to respondents. Third on the list of factors that respondents deemed important for building a sustainable enterprise was the centrality to business strategy with a mean of 3.60). The respondents indicated the importance of setting the principles of sustainability central to the company's competitive strategy, so all practices revolve around values related to sustainability.

In addition, respondents to the Spanish Sustainability Survey recognized the qualities of systems alignment, metrics, stakeholder engagement and organization integration to creating a sustainable organization moderately important, with means ratings of 3.48, 3.40, 3.35 and 3.30, respectively. These four qualities do not seem to be very important and key factors for the Spanish companies in order to move towards sustainability.

On a scale from 1-5, how important are the following qualities for building a sustainable enterprise?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Value – Key values related to sustainability have been deeply ingrained in the company	1	3.80	2	4.15	- 0.35
Top management support – The CEO, the chairman of the board, and senior management teams show public and unwavering support for sustainability	2	3.75	1	4.36	- 0.61
Centrality to business strategy – Sustainability is central to the company's competitive strategy	3	3.60	3	4.07	- 0.47
Systems alignment – The company's structure, systems, processes, and culture are aligned around sustainability	4	3.48	4	3.98	- 0.50
Metrics – The company deploys an array of rigorous sustainability measures	5	3.40	5	3.89	- 0.49
Stakeholder engagement – The company reaches out to and involves a broad array of external and internal stakeholders around sustainability issues, including customers, suppliers, governmental, and nongovernmental organizations (NGOs)	6	3.35	7	3.87	- 0.52
Organizational integration – Various aspects of sustainability are viewed holistically and integrated across the functions that have responsibility for them	7	3.30	6	3.88	- 0.58

Table 6.9: Importance of qualities for building a sustainable enterprise
Mean responses on a 5-point scale, where 1 = not at all and 5 = very important

The respondents to the Spanish Sustainability Survey rated every element as important for building a sustainable enterprise (means from about 3.30 to 3.80). But it also found sizable gaps between the perceived importance of these qualities and the degree to which the average responding organizations have these qualities (means from 2.73 to 3.08). Judging by the important rating of these qualities and low actual penetration of these qualities into practice, companies must change corporate strategies to close this gap.

Key values related to sustainability were considered quite important for the Spanish companies (mean of 3.80), however they only practice this quality to a moderate extent (mean of 3.08). Also, top management support and centrality to business strategy are seen as very important, although these qualities are not actually practiced to a high extent by the Spanish companies. In order to adopt these qualities, the managers might develop and support a program that helps to ingrain key values related to sustainability and, at the same time, implement sustainability as a reference to the core of the program.

The rest of the qualities listed are not seen as very important by the Spanish companies, and of course, that is why they probably do not adopt them into practice to a great extent. But in fact, these qualities are important. Probably, the respondents of the Spanish survey do not consider these qualities important because of their lack of knowledge with respect to the advantages from adopting such qualities. If so, it would be an internal problem of the organization. However, these organizations might not

implement these qualities based on the difficulty of doing so. In this case, they might focus their efforts more on implementing sustainable practices that help them adopt these qualities.

On a scale from 1-5, to what extent does your company have the following qualities for building a sustainable enterprise?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Value – Key values related to sustainability have been deeply ingrained in the company	1	3.08	3	3.10	- 0.02
Top management support – The CEO, the chairman of the board, and senior management teams show public and unwavering support for sustainability	2	3.05	1	3.33	- 0.28
Centrality to business strategy – Sustainability is central to the company's competitive strategy	3	2.88	2	3.23	- 0.35
Stakeholder engagement – The company reaches out to and involves a broad array of external and internal stakeholders around sustainability issues, including customers, suppliers, governmental, and nongovernmental organizations (NGOs)	4	2.83	5	2.90	- 0.07
Systems alignment – The company's structure, systems, processes, and culture are aligned around sustainability	5	2.78	6	2.88	- 0.10
Metrics – The company deploys an array of rigorous sustainability measures	6	2.73	4	2.91	- 0.18
Organizational integration – Various aspects of sustainability are viewed holistically and integrated across the functions that have responsibility for them	7	2.73	7	2.82	- 0.09

Table 6.10: Extent to which companies have the qualities of sustainable enterprises
Mean responses on a 5-point scale, where 1 = not at all and 5 = to a very great extent

Both the Spanish companies and the AMA Sustainability Survey respondents reported that their organizations practiced these qualities to a moderate extent. For example, for the Spanish companies the mean value was 3.08, for top management support 3.06, and for centrality to strategy 2.88. The smallest difference between responses in the Spanish and the AMA survey was 0.02. By contrast, centrality to business strategy had the greatest difference, 0.35.

On the other hand, the differences between both surveys in regards to the perceived importance of qualities for building a sustainable enterprise are greater. The quality key values related to sustainability displays the similarity in responses between the two surveys with a difference of 0.35. Interestingly, the difference between the two surveys with respect to the actual practice of this quality is even smaller, 0.02. The greatest difference between averages, 0.58, was for organizational integration. Furthermore, the respondents of the Spanish Sustainability Survey highlight the importance of these qualities in a moderately strong extent (from 3 to 4), in which standing out values ranked as the most highly important element of the sustainability on the survey followed by top management support. The companies of the AMA Sustainability Survey said their firms highlight the importance of these qualities to a high extent (close to 4), identifying top management support as the most highly rated element.

The results revealed that, even though the respondents of AMA survey consider the qualities to build a sustainable enterprise to a greater extent than the Spanish companies, both groups of respondents practice these qualities to a similar extent. Hence, the first step that Spanish companies should take is to understand the several advantages that can they gain by implementing these specific sustainable practices. On the other hand, the companies within the AMA survey should focus their efforts on improving their existing sustainable practices.

6.6. Items to drive key business decisions

In order to achieve sustainability goals, a number of items to drive decisions in the companies must be considered. Table 6.11, Table 6.12 and Table 6.13 show a list of 25 issues to drive business decisions today as well as in 10 years in the future on a scale of 1 to 5, where 1 equals “not at all” and 5 equals “to a very great extent”.

The top-ranked issue that drives key business decisions today considered by the Spanish companies is ensuring worker’s health and safety wherever they operate, at 3.90. Although the scores of this issue, both now and ten years into the future, are not significantly different, from a future perspective, it is not considered as a business driver in the highest extent as it occupies the 5th position in the list. The two following top-ranked driving key business items in current practices are enhancing innovation for competitive advantage and increasing workforce productivity (means of 3.88 and 3.83, respectively) and the differences in regard to 10 years into the future are almost negligible (0.08 and 0.10, respectively). It should be noted that enhancing innovation for competitive advantage occupies the 1st position in the list for future drivers.

Note that the three issues that drive key business decisions to a greater extent for the Spanish companies are related to workforce and enterprise performance. In fact, on a list of 25 issues, the first environmental issue is positioned 8th. The top-ranked environmental issue – ensuring an adequate supply of water for our employees, suppliers, customers, and the communities in which we operate – was viewed as a driving key business decision to only a moderately high extent, at 3.63. The second-highest-ranking environmental issue was securing needed energy resources, ranked 11th and received a rating of 3.43 in terms of importance today. Meanwhile, the environmental issue that is probably the most important worldwide issue nowadays – the risks associated with greenhouse gases and global climate change – was not seen as a highly ranked driver of key business decisions. It was ranked 22th on the list and it was considered important to a moderate extent, at 3.08. Looking 10 years out, this issue is ranked 23th and the extent to which it is seen as driving key business decisions 10 years into the future is greater, although it is quite insignificant (mean of 3.18). Finally, the lowest rating was for finding solutions to the challenges of immigration, at 2.60.

Although in 10 years this item will be seen as more important (mean of 2.95), it will continue being the least important issue to take into account. Other environmental issues that have relatively low ranks in terms of driving key business decisions are reducing pollution toxic chemical use and their effects (ranked 14th today and 18th in 10 years), enhancing operational efficiency through energy and waste reduction (ranked 15th today and 17th in 10 years) and securing needed raw materials over the long term (ranked 16th today and 19th in 10 years).

As Table 6.11 shows, in 10 years the Spanish companies will continue viewing the items that are not directly related with the environment as the most important. In fact, the three most important issues with respect to 10 years in the future considered by Spanish companies are also related with the workforce. Enhancing innovation for competitive advantage obtained the highest score, at 3.80. Ranked 2nd on the list was increasing workforce productivity, at 3.73. Finally, improving the reputation/brand image with shareholders and the public obtained the same score than increasing workforce productivity. It should be noted that a better brand image seems to be more important in 10 years than nowadays. Anyways, the Spanish companies need to consider whether the environment can sustain their economic activities. Furthermore, the companies also need to think about how they can harm the environment, and even which business advantages they can achieve. When they reach this point of awareness, they may begin to think which sustainable practices are required to implement in order to protect and preserve the environment.

Finally, note that there are important gaps between the most rated issue and the least rated ones that drive key business decisions for Spanish companies today (means from 2.60 to 3.90). By contrast, these gaps seem to be closer with the items that will drive business decisions in 10 years (means from 2.95 to 3.70, see Table 6.11). It is interesting to note that the issues ranked in the first half of the list will drive key business decisions to a greater extent today than 10 years into the future. By contrast, the items positioned in the second half of the list will drive key business decisions to a greater extent in 10 years than they currently do. It seems that the Spanish companies will implement the items ranked in the second half of the list to a greater extent in 10 years from now. However, they may also try to implement the items positioned in the first half of the list to a higher extent, or at least, with the same commitment as now.

On a scale from 1-5, to what extent does each of the following items drive key business decisions for your company today and in 10 years?					
Issues	***Today***		***In 10 years***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Ensuring our worker's health and safety wherever we operate	1	3.90	5	3.70	+ 0.20
Enhancing innovation for competitive advantage	2	3.88	1	3.80	+ 0.08
Increasing workforce productivity	3	3.83	2	3.73	+ 0.10
Effectively addressing regulatory restrictions wherever we operate	4	3.78	6	3.63	+ 0.15
Providing products and services that are good for the world	5	3.68	7	3.60	+ 0.08
Improving our reputation/brand image with shareholders and the public	6	3.65	3	3.73	- 0.08
Ensuring proper employee treatment among suppliers	7	3.63	13	3.40	+ 0.23
Ensuring an adequate supply of water for our employees, suppliers, customers, and the communities in which we operate	8	3.63	9	3.53	+ 0.10
Improving employee morale, engagement and commitment	9	3.48	4	3.73	- 0.25
Increasing security for our employees, customers and the communities in which we operate	10	3.48	10	3.78	- 0.40
Securing needed energy resources (electricity and fuel)	11	3.43	11	3.45	- 0.02
Meeting expectations of investors and lenders	12	3.40	14	3.38	+ 0.02
Attracting and retaining diverse top talent	13	3.38	8	3.55	- 0.17
Reducing pollution and toxic chemical use and their effects on our employees, customers and the communities in which we operate	14	3.35	18	3.35	0
Enhancing operational efficiency through energy and waste reduction	15	3.25	17	3.35	- 0.10
Securing needed raw materials over the long term for our employees, suppliers, customers, and the communities in which we operate	16	3.23	19	3.35	- 0.12
Addressing challenges of healthcare systems and reducing healthcare costs	17	3.20	12	3.40	- 0.20
Enhancing current customer satisfaction and loyalty though sustainability initiatives	18	3.20	15	3.35	- 0.15
Finding solutions to the challenges of an aging workforce	19	3.15	20	3.33	- 0.18
Attracting new customers and developing new markets though sustainability initiatives	20	3.10	16	3.35	- 0.25
Encouraging suppliers to use management practices that enhance sustainability	21	3.08	21	3.33	- 0.25
Reducing and/or managing the risks and impacts of climate change on our employees customers, and the communities in which we operate	22	3.08	23	3.18	- 0.10
Improving relations with community stakeholders including non-governmental organizations (NGOs) and community activists	23	3.00	24	3.13	- 0.13
Working with other firms to voluntarily create sustainable industry standards	24	2.88	22	3.28	- 0.4
Finding solutions to the challenges of immigration	25	2.60	25	2.95	- 0.35

Table 6.11: Extent to which items drive key business decisions today and in ten years
Mean responses on a 5-point scale, where 1 = not at all and 5 = to a very great extent

Comparing the results obtained from the Spanish companies and the companies of the AMA Survey, the respondents of the Spanish Sustainability Survey reported that their organizations ranked these items as key corporate drivers today to a moderate extent (mean of means of 3.37 today). By contrast, the AMA Sustainability Survey respondents reported that their organizations follow these items to a higher extent (mean of means of 3.58 today). On the other hand, the respondents of both surveys agreed on the most powerful item that drives key business decisions today: ensuring our worker's health and safety wherever we operate (means of 3.90 for the Spanish survey and 4.19

for the AMA survey). Enhancing innovation for competitive advantage was ranked 2th by the Spanish companies with a mean of 3.88. By contrast, this issue was ranked 5th by the respondents of the AMA survey, although the rating was higher, at 4.19. Closer to innovation, increasing workforce productivity was ranked 3rd by the Spanish companies and 2th by the AMA survey.

In addition, the smallest difference between responses in the Spanish and the AMA survey was for securing needed energy resources, 0.02. As the Table 6.12 shows, the means of the environmental issues of both surveys are quite close, so we can see that nowadays the importance given to the environmental issues is quite the same for the companies of both surveys. But note that there is an exception. Ensuring an adequate supply of water had the greatest difference of the environmental issues. For the Spanish companies, it seems to be more important (mean of 3.63 and ranked 8th) than for the companies of the AMA survey (mean of 3.25 and ranked 19th). This is probably due to the water crises that some regions of Spain suffered in 2006, in which it did not rain and water reservoirs were almost empty. Since that time, awareness with respect to the need for improved water reservoirs had greatly risen. These results have reflected the importance that Spanish firms have given to water issues. On the other hand, meeting expectations of investors and lenders, and addressing challenges of healthcares systems and reducing healthcare costs had the greatest difference, 0.59 for both issues.

On a scale from 1-5, to what extent does each of the following items drive key business decisions for your company today?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Ensuring our worker's health and safety wherever we operate	1	3.90	1	4.19	- 0.29
Enhancing innovation for competitive advantage	2	3.88	5	4.00	- 0.12
Increasing workforce productivity	3	3.83	2	4.14	- 0.31
Effectively addressing regulatory restrictions wherever we operate	4	3.78	4	4.02	- 0.24
Providing products and services that are good for the world	5	3.68	10	3.76	- 0.08
Improving our reputation/brand image with shareholders and the public	6	3.65	3	4.12	- 0.47
Ensuring proper employee treatment among suppliers	7	3.63	21	3.21	+ 0.42
Ensuring an adequate supply of water for our employees, suppliers, customers, and the communities in which we operate	8	3.63	19	3.25	+ 0.38
Improving employee morale, engagement and commitment	9	3.48	8	3.86	- 0.38
Increasing security for our employees, customers and the communities in which we operate	10	3.48	12	3.59	- 0.11
Securing needed energy resources (electricity and fuel)	11	3.43	17	3.41	+ 0.02
Meeting expectations of investors and lenders	12	3.40	6	3.99	- 0.59
Attracting and retaining diverse top talent	13	3.38	7	3.95	- 0.57
Reducing pollution and toxic chemical use and their effects on our employees, customers and the communities in which we operate	14	3.35	16	3.44	- 0.09
Enhancing operational efficiency through energy and waste reduction	15	3.25	15	3.45	- 0.20
Securing needed raw materials over the long term for our employees, suppliers, customers, and the communities in which we operate	16	3.23	22	3.20	+ 0.03
Addressing challenges of healthcare systems and reducing healthcare costs	17	3.20	9	3.79	- 0.59
Enhancing current customer satisfaction and loyalty though sustainability initiatives	18	3.20	11	3.62	- 0.42
Finding solutions to the challenges of an aging workforce	19	3.15	18	3.37	- 0.22
Attracting new customers and developing new markets though sustainability initiatives	20	3.10	13	3.58	- 0.48
Encouraging suppliers to use management practices that enhance sustainability	21	3.08	20	3.25	- 0.17
Reducing and/or managing the risks and impacts of climate change on our employees customers, and the communities in which we operate	22	3.08	24	3.01	+ 0.07
Improving relations with community stakeholders including non-governmental organizations (NGOs) and community activists	23	3.00	14	3.47	- 0.47
Working with other firms to voluntarily create sustainable industry standards	24	2.88	23	3.12	- 0.24
Finding solutions to the challenges of immigration	25	2.60	25	2.73	- 0.13

Table 6.12: Extent to which items drive key business decisions today
Mean responses on a 5-point scale, where 1 = not at all and 5 = to a very great extent

In addition, the differences between both surveys about items that drive business decisions in 10 years are greater (mean of means of 3.45 for the Spanish survey and 3.94 for the AMA survey; see Table 6.13). The greatest difference between averages, 0.79, was for meeting expectations of investors and lenders, and ensuring proper employee treatment among suppliers had the smallest difference, 0.06. Furthermore, the respondents of the Spanish Sustainability Survey highlight the importance of these qualities in a moderately strong extent (mean of means of 3.45), standing out enhancing innovation for competitive advantage as the most highly rated element of the sustainability on the survey followed by increasing workforce productivity. In contrast,

the respondents of these AMA survey consider these issues more important. In fact, every item listed seems to be more important for the companies of the AMA survey than the Spanish companies. The AMA Sustainability Survey reported that their firms highlight the importance of these qualities to a high extent (mean of means 3.94), identifying improving our reputation/brand image with shareholders and the public as the most highly rated element on the list.

On a scale from 1-5, to what extent does each of the following items drive key business decisions for your company in 10 years?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Enhancing innovation for competitive advantage	1	3.80	2	4.35	- 0.55
Increasing workforce productivity	2	3.73	5	4.31	- 0.58
Improving our reputation/brand image with shareholders and the public	3	3.73	1	4.35	- 0.62
Improving employee morale, engagement and commitment	4	3.73	8	4.16	- 0.43
Ensuring our worker's health and safety wherever we operate	5	3.70	4	4.33	- 0.63
Effectively addressing regulatory restrictions wherever we operate	6	3.63	6	4.20	- 0.57
Providing products and services that are good for the world	7	3.60	11	4.09	- 0.49
Attracting and retaining diverse top talent	8	3.55	3	4.33	- 0.78
Ensuring an adequate supply of water for our employees, suppliers, customers, and the communities in which we operate	9	3.53	20	3.65	- 0.12
Increasing security for our employees, customers and the communities in which we operate	10	3.78	13	3.95	- 0.17
Securing needed energy resources (electricity and fuel)	11	3.45	17	3.83	- 0.38
Addressing challenges of healthcare systems and reducing healthcare costs	12	3.40	9	4.12	- 0.72
Ensuring proper employee treatment among suppliers	13	3.40	24	3.46	- 0.06
Meeting expectations of investors and lenders	14	3.38	7	4.17	- 0.79
Enhancing current customer satisfaction and loyalty though sustainability initiatives	15	3.35	10	4.10	- 0.75
Attracting new customers and developing new markets though sustainability initiatives	16	3.35	12	4.04	- 0.69
Enhancing operational efficiency through energy and waste reduction	17	3.35	14	3.94	- 0.59
Reducing pollution and toxic chemical use and their effects on our employees, customers and the communities in which we operate	18	3.35	18	3.83	- 0.48
Securing needed raw materials over the long term for our employees, suppliers, customers, and the communities in which we operate	19	3.35	22	3.57	- 0.22
Finding solutions to the challenges of an aging workforce	20	3.33	15	3.93	- 0.60
Encouraging suppliers to use management practices that enhance sustainability	21	3.33	19	3.72	- 0.39
Working with other firms to voluntarily create sustainable industry standards	22	3.28	21	3.58	- 0.30
Reducing and/or managing the risks and impacts of climate change on our employees customers, and the communities in which we operate	23	3.18	23	3.54	- 0.36
Improving relations with community stakeholders including non-governmental organizations (NGOs) and community activists	24	3.13	16	3.84	- 0.71
Finding solutions to the challenges of immigration	25	2.95	25	3.12	- 0.17

Table 6.13: Extent to which items drive key business decisions in 10 years
Mean responses on a 5-point scale, where 1 = not at all and 5 = to a very great extent

The conclusions drawn from the results are that it seems to be a big gap between both surveys about the extent to which these items drive key business decision in 10

years. Spanish companies seem to be stuck for the future. Hence, once again, Spanish companies will take into account these items to a higher extent as well as implement some changes and improvements in their organizations in order to realize a sustainable future.

6.7. Barriers to sustainability

In order for Spanish companies to move strategically towards sustainability, it is necessary to understand the organizational factors that can hinder or facilitate this organizational shift. Table 6.14 shows to what extent various barriers hinder companies from moving toward sustainability, on a scale from 1 to 5, 1 indicates “very little” and 5 “very much”.

The results reflected that the lack of standardized metrics or performance benchmarks as well as the lack of specific ideas on what to do and when to do it essentially tied as the highest ranked factors hindering companies from moving further in the direction of sustainability (overall means of 3.18 and 3.15, respectively). One way to overcome these most significant barriers could be the use of some tools as eco-efficiency indicators to measure the benefits achieved through the implementation of sustainability. This would allow obtaining information on the environmental performance of the enterprise with respect to its financial performance.

Close on the heels were the third and fourth ranked reasons: unclear or weak business case and lack of demand from shareholders and investors (overall means of 3.13 and 3.05, respectively). But it should also be noted that none of these barriers received ratings that were above the moderate level. In other words, no issues were seen as particularly strong barriers in regards to sustainability. Neither the lack of demand from consumers, customers, senior leaders, suppliers and the community seems to be a strong barrier to hinder companies from moving toward sustainability.

Also, the lack of awareness and understanding should be considered as a key factor because it is seen as a cultural issue that can be changed from inside the organization as well as a key item to develop sustainable practices. In this case, the respondents of the Spanish survey do not see this issue as a strong barrier to sustainability as it was ranked eleventh on the list with a mean of 2.83. Finally, the fear of competitors taking advantage of the company is not considered a strong barrier so far (lowest mean of 2.33).

On a scale from 1-5, to what degree does each of the following issues hinder you from moving toward sustainability?					
Issues	***Spanish Survey***		***AMA Survey***		***Difference***
	Rank	***Mean***	***Rank***	***Mean***	
Lack of standardized metrics or performance benchmarks	1	3.18	4	3.10	+ 0.08
Lack of specific ideas on what to do and when to do it	2	3.15	5	3.08	+ 0.07
Unclear or weak business case	3	3.13	8	2.97	+ 0.06
Lack of demand from shareholders and investors	4	3.05	6	3.04	+ 0.01
Lack of demand from consumers and customers	5	2.98	1	3.13	- 0.15
Lack of demand from senior leaders	6	2.98	10	2.92	+ 0.06
Lack of demand from suppliers	7	2.88	7	2.99	- 0.11
Lack of demand from the community	8	2.88	9	2.93	- 0.05
General risk aversion	9	2.85	11	2.80	+ 0.05
Lack of demand from managers and employees	10	2.83	2	3.13	- 0.30
Lack of awareness and understanding	11	2.83	3	3.11	- 0.28
Fear of competitors taking advantage of us	12	2.33	12	2.38	- 0.05

Table 6.14: Factors that can hinder the movement toward sustainability practices
Mean responses on a 5-point scale, where 1 = very little and 5 = very much

Comparing both surveys, the Spanish Sustainability Survey and the AMA Sustainability Survey respondents agreed that the barriers proposed are impeding progress to a moderate extent (the averages of averages are 2.93 for the Spanish survey and 2.97 for the AMA survey). Furthermore, there are not significant differences between the gaps of both surveys. The smallest difference between responses was for the lack of demand from shareholders and investors (i.e. 0.01). On the other hand, lack of demand from managers and employees had the greatest difference between averages, 0.30. Furthermore, the respondents of both surveys regarded the fear of competitors taking advantage as the last blocking barrier. The score in the Spanish Sustainability Survey was 2.33 and in the AMA Sustainability Survey, 2.38.

By contrast, the respondents of both surveys did not agree on the most powerful factors hindering companies from moving further in the direction of sustainability. For instance, the Spanish Sustainability Survey respondents regarded the lack of standardized metrics or performance benchmarks as the greatest barrier with a score of 3.18, while the respondents of the AMA survey ranked this issue fourth (mean of 3.10), with both means being quite close (difference of 0.08). On the other hand, the lack of awareness and understanding is ranked eleventh for the Spanish companies and ranked as the third most important issue for the AMA survey respondents, as the difference is rather small, 0.28. Also, the lack of demand from managers and employees is not considered very impeding for Spanish companies (mean of 2.83). Instead, it is ranked the second most important impediment for the respondents of the AMA survey (mean of 3.13).

In total, the conclusions drawn here are that even though both surveys differ in regards to the most powerful barriers, the differences are not significant and not one of them is seen as a strong barrier to moving toward sustainability.

6.8. Summary

The Spanish Sustainability Survey looked at a number of factors related to sustainability. In addition to procuring a wider overview of the current situation, the results of the Spanish survey also were compared with the results obtained by the AMA Sustainability Survey. Below is a quick review of some key findings from the Spanish Sustainability Survey from approximately 40 companies around Spain:

- **General claims and issues regarding to sustainability are not yet fully realized and implemented in most companies.** The Spanish firms do not consider to a great extent that sustainable development provides their companies new and additional business opportunities. This could probably be due to a lack of knowledge about the benefits that would be realized if the organizations implements and/or improved their sustainable practices.

- **In general, the organizations have practices in place related to social issues, specifically related to the workforce.** The most widely adopted practices include ensuring accountability for ethics at all levels, ensuring the health and safety of employees and involving employees in decisions that affect them (see Table 6.7). In fact, the well-being of employees is one of the most important issues considered by the Spanish companies. Specifically, sustainability-related issues as a safe and healthy work environment, worker job security, human rights and affordable quality health care are all considered as very important (see Table 6.8). Furthermore, ensuring worker's health and safety ranked as the most important item to drive key business decisions for Spanish companies (see Table 6.11).

- **Environmental practices are not fully implemented by Spanish companies.** According to the results, Spanish companies prioritize practices related to social issues over environmental issues. The highest rated practice related to the environmental was improving energy efficiency, although it was only implemented to a moderate extent (see Table 6.7). Hence, there exists significant opportunities for further implementation of environment-related sustainable practices.

- **Sustainability-related issues are important to a moderately high extent.** Safe and healthy work environments as well as business ethics and integrity were the

highest rated issues from the social point of view. The top rated issue related to the environment was clean water, ranked 2nd in the list (see Table 6.8).

- **There are three qualities that are most important to successfully implementing a sustainability strategy:**

  1. Deeply held corporate values consistent with sustainability
  2. Top management's visible support for sustainability
  3. Sustainability's placement as central to overall corporate strategy

  Although there are sizable gaps between the perceived importance of these qualities and the degree to which the average responding organization has these qualities. These gaps may be closer over time as more companies adopt sustainability qualities to a higher extent.

- **Key business decisions are driven to a moderate extent by many sustainability-related issues.** Business decision makers consider the issues of sustainability not very important to their business. However, the Spanish companies consider as more important the items that are not directly related with the environment. Specifically, reducing or managing the risks of climate change was not highly rated in terms of its ability to drive key business issues, either today or 10 years into the future (see Table 6.11).

- **There are not strong barriers that impede organizations' shift toward sustainability.** Not one of the barriers that were asked about was seen as very strong. The ones with the highest rating were the lack of standardized metrics or performance benchmarks, lack of specific ideas on what to do and when to do it and unclear or weak business cases (see Table 6.14).

- **Sustainability performance indicators are not deeply ingrained in the companies.** Spanish companies find measuring the sustainability of operations problematic. Specifically, the survey points out that the companies establish indicators to determine if the organization is meeting sustainability goals to a low extent. In fact, this issue was ranked last for sustainability related practices (see Table 6.7). Furthermore, Spanish companies deploy an array of rigorous sustainability measures to a moderate extent; at 3.40 over 5 (see Table 6.9). Indeed, this is also reflected in the list of factors that can hinder the movement toward sustainability practices. Lack of standardized metrics or performance benchmarks was the most obstructive barrier identified by the Spanish companies to move toward sustainability (see Table 6.14).

- **Sustainable strategy is not yet fully implemented in most companies.** The degree to which sustainability strategies were being implemented was not very

high. Furthermore, Table 6.15 shows that the organizations see measurable results from sustainability initiatives in a low extent, 2.60. This could be because they maybe do not see benefits in the short-term. Procuring benefits from sustainable practices takes time, so they might try to follow sustainable-related initiatives to a stronger extent. Finally, the respondents of the Spanish survey recognize that they do not supply and review information that is used to develop sustainability-related metrics for the company to a high extent. This may be one of the causes why they do not see so many benefits from sustainability initiatives.

On a scale from 1-5, rate your company on the following questions:			
Issues	***Spanish Survey***	***AMA Survey***	***Difference***
Do you believe that your organization is implementing a sustainable strategy?	2.75	2.99	- 0.24
Do you supply and/or review information that is used to develop sustainability-related metrics for your company?	2.23	2.64	- 0.41
Is your organization seeing measurable results from sustainability initiatives?	2.60	2.88	- 0.28

Table 6.15: Implementing sustainability strategies, review information that is used to develop sustainable-related metrics, and seeing measurable benefits

Mean responses on a 5-point scale, where 1 = not at all and 5 = to a very great extent

In general, the companies of AMA Sustainability Survey seem to follow sustainability initiatives to a higher extent than the Spanish companies, and of course, that is why they can see more measurable benefits from these initiatives. By contrast, both groups of respondents follow initiatives related to social issues to a greater extent than the environmental issues. The final conclusion is that they must put more effort to implementing sustainable practices that help conserve the environment. In addition, the Spanish companies, specifically, must implement changes and improvements in all general levels regarding to sustainability.

7. Summary and conclusions

This study focused on sustainable development and presented Spanish companies' views on those. Objectives, potential advantages, barriers and requirements of sustainability were discussed based on literature. Then, final results of a survey among Spanish companies were reported.

The objectives pursued by sustainable development on the corporate level can be summarized around three key issues: society, the environment and their economic standing. The achievement of these objectives offers clear business benefits to organisations and a positive contribution to the welfare of society. The advantages range from creating a significant competitive advantage for the organizations to the generation of a positive perception of the company among customers and society. On the other hand, the achievement of these objectives and benefits can only be realized through the implementation of some requirements. Requirements on the corporate level also can be divided into the same three key issues: social, environmental and economic sustainability. From the environmental and economic perspectives, eco-efficiency covers the entire environmental requirements and some of the economical aspects. Also, corporate social responsibility should be taken into account with the aim to cover the social requirements. Finally, the integration of these requirements is achieved through the implementation of sustainable practices that push the companies to obtain benefits of realizing sustainable development.

Based on the survey, the Spanish companies prioritized practices related to social issues over ones related to environmental issues. In fact, the well-being of employees is one of the most important issues considered by the Spanish companies. Specifically, the most widely adopted practices included ensuring accountability for ethics at all levels, ensuring the health and safety of employees and involving employees in decisions that affect them. Furthermore, sustainability-related issues, such as safe and healthy work environments, worker job security, human rights and affordable quality health care are all considered very important. Since the polled Spanish companies ranked the environmental issues low in important, it should not be a surprise that environmental practices are not fully implemented. Looking at the qualities needed to realize sustainable development, the Spanish companies viewed embedding sustainability related values deeply throughout their company, top management support for sustainability, and centrality of sustainability to business strategy as key enablers of sustainable development. On the other hand, lack of standardized metrics or performance benchmarks was regarded as the most obstructive barrier to move toward sustainability. In fact, Spanish companies find measuring the sustainability of operations problematic, thus, sustainability performance indicators are not deeply ingrained in their organizational missions.

Finally, Spanish companies recognized that sustainable strategy is not yet fully implemented in their companies. In fact, this could be a cause of why the companies do not see considerable measurable results from sustainability initiatives. The responses were also compared to an earlier study from which the questionnaire used was adopted. The comparison showed that the companies that responded to the AMA Sustainability Survey seem to follow sustainability initiatives to a higher extent that the Spanish companies. By contrast, both groups of respondents follow initiatives related to social issues to a greater extent than the environmental issues. Therefore, they must put more effort in implementing sustainable practices that help conserve the environment. In addition, the Spanish companies, specifically, must implement changes and improvements in all general levels regarding to sustainability.

This exploratory study contributes to the literature by providing specific answers as to which are the strongest enablers, barriers and best practices in realizing sustainable development at the firm level identified by Spanish companies. At the firm level, the management of continuous improvement processes should be performed in a consistent and stable manner. Another of the most important enablers for success in sustainability is the involvement of workers as executors of the improvements developed. To do this, a change of culture within the company is needed and this is achieved through education for sustainability. Therefore, in general, the company should make a change in the strategy that facilitates achieving the objectives of sustainable development. In addition, this exploratory study also might help for the future directions of academic research. In fact, further studies might be needed to confirm the benefits of sustainable practices and to meet possible requirements that influence these benefits. Furthermore, the results and insights gained can be used in future projects to identify more practices and to develop specific tools and methods for realizing sustainability.

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Appendices

APPENDIX 1. Cover letter sent to the Spanish companies

APPENDIX 2. Questionnaire used to collect data from the participants of the Spanish companies

APPENDIX 1. Cover letter sent to the Spanish companies

Dear Sir or Madam:

I am a Master's student in the Department of Production at the Tampere University of Technology (Finland) conducting research under the supervision of Professor Seppo Torvinen. This research project is based on the outlook that to succeed in the global competition and business environment, companies need to combine, in their decisions and actions, cost-effectiveness, customer orientation, and sustainable development.

The project aims to collect and clarify opinions on advantages, business opportunities and challenges of sustainable development and sustainable manufacturing and aims to identify best practices and means to implement and achieve sustainable manufacturing. My Master's thesis focuses on Spanish companies, what they think about sustainable development and sustainable manufacturing and to what degree the practices are implemented.

I have randomly selected 100 Spanish companies and have sent each of these companies the enclosed questionnaire. Your company is one of those selected and I would appreciate if you would complete the attached, brief questionnaire.

Completion of the questionnaire would take 10 minutes of your time, and may be filled out by any member of your company. Participation in this project is completely voluntary. If you would like to write additional comments on the questionnaire, please feel free to do so. There is also the possibility that the survey be answered by more than one member of your company. If so we may send you a summary of the responses of your company as this could be interesting and useful to you so you can draw your own conclusions from the overall vision of the company members.

All information that you provide through your participation in this study will be kept confidential. Further, you will not be identified in the thesis or in any report or publication based on this research. There are no known or anticipated risks to participation in this study. The data collected through this study will be kept in a secure location. The structure of this questionnaire is based in a Google spreadsheet and it would be appreciated if you would address in the following link and complete the questionnaire. In the last page of the questionnaire exists the option to automatically send it back.

https://spreadsheets.google.com/viewform?formkey=dE01dkREUEZTR19RZ0xELVhFRVRESHc6MQ

If after receiving this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participating, please feel free to contact myself, Alexandre Torres at *+358465965531* or e-mail at *xelandre@msn.com*

Thank you in advance for your co-operation in my research.

Yours sincerely,

Alexandre Torres
Research assistant

"If we do not think about the future, we cannot have one"

John Galsworthy

APPENDIX 2. Questionnaire used to collect data from the participants of the Spanish companies

The following questionnaire is divided into two parts:
Part 1 – Background: open questions.
Part 2 – General questions: multiple choice questions which must be evaluated with a score from 1 to 5.

Background information

- Which is the name of the company?
- What is the size of your organization's workforce (worldwide)?
- In what function do you currently work? (e.g. Marketing, sales, research and development, sourcing, production, HR)
- What is your currently title?
- What is your gender?
- What is your age?

General questions

On scale 1-5, evaluate and rate the realization and implementation of the following claims and issues in your company (1 – not realized or implemented / 5 – fully realized and implemented)

- We actively follow the development and changes in our customers need and requirements related to sustainable development
- Sustainable development provides our company new and or additional business opportunities
- Our marketing and reporting emphasises and utilises sustainable development
- We utilise sustainability of our products in sales and marketing
- We design our products based on principles on sustainable development
- We consider sustainable development in our sourcing and procurement decisions
- Principles and requirements of sustainable development are considered and taken into account in our production and operations
- We utilise recyclable packages and materials in our deliveries, purchases and procurement
- Sustainable development has an effect on our logistical decisions
- After sales is an important part of our business

On scale 1-5, how to important are the following sustainability-related issues to you your company? (1 – not at all / 5 – very important)

- Business ethics and integrity
- Safe and healthy work environment
- Affordable quality health care
- Well-being of employees
- Clean water
- Corruption in all its form
- Worker job security
- Safe and reliable food sources
- Human rights abuses
- Affordable clean energy
- Assistance after natural disasters
- Poverty and homelessness
- Climate change
- Epidemics
- Diverse ecosystem
- Open immigration
- World population growth
- Right collective bargaining

On scale 1-5, to what extent does your company have practices in place to do the following? (1 – not at all / 5 – to a very great extent)

- Ensure the health and safety of employees
- Ensure accountability ethics at all levels
- Engage collaboratively with community and non-governmental groups
- Support employees in balancing work and life activities
- Encourage employee volunteerism
- Involve employees in decisions that affect them
- Provide employee training and development related to sustainability
- Highlight our commitment to sustainability in our brand
- Improve energy efficiency
- Work with suppliers to strengthen sustainability practices
- Get groups across your organization that are working on sustainability-related initiatives to work more closely together
- Use sustainability-related criteria in recruiting and selection
- Establish indicators to determine if the organization is meeting the sustainability goals
- Use sustainability-related criteria in promotion and career advancement
- Reduce greenhouse gas emissions
- Link sustainability-related criteria to compensation

On scale 1-5, how important are the following qualities for building a sustainable enterprise? (1 – not at all / 5 – very important)

- Top management support – The CEO, the chairman of the board, and senior management teams show public and unwavering support for sustainability
- Value – Key values related sustainability have been deeply ingrained in the company
- Centrality to business strategy – Sustainability is central to the company's competitive strategy?
- Systems alignment – The company's structure, systems, processes, and culture are aligned around sustainability
- Metrics – The company deploys an array of rigorous sustainability measures
- Organizational integration – Various aspects of sustainability are viewed holistically and integrated across the functions that I have responsibility for them
- Stakeholder engagement – The company reaches out to and involves a broad array of external and internal stakeholders around sustainability issues, including customers, suppliers, governmental, and nongovernmental organizations (NGOs)

On scale 1-5, to what extent does your company currently have the following qualities for sustainability? (1 – not at all / 5 – to a very great extent)

- Top management support – The CEO, the chairman of the board, and senior management teams show public and unwavering support for sustainability
- Value – Key values related sustainability have been deeply ingrained in the company
- Centrality to business strategy – Sustainability is central to the company's competitive strategy?
- Systems alignment – The company's structure, systems, processes, and culture are aligned around sustainability
- Metrics – The company deploys an array of rigorous sustainability measures
- Organizational integration – Various aspects of sustainability are viewed holistically and integrated across the functions that I have responsibility for them
- Stakeholder engagement – The company reaches out to and involves a broad array of external and internal stakeholders around sustainability issues, including customers, suppliers, governmental, and nongovernmental organizations (NGOs)

On scale 1-5, to what extent does each of the following items drive key business decisions for your company today? (1 – not at all / 5 – to a very great extent)

- Ensuring our worker's health and safety wherever we operate
- Increasing workforce productivity
- Improving our reputation/brand image with shareholders and the public
- Effectively addressing regulatory restrictions wherever we operate
- Enhancing innovation for competitive advantage
- Meeting expectations of investors and lenders
- Attracting and retaining diverse top talent
- Improving employee morale, engagement and commitment
- Addressing challenges of healthcare systems and reducing healthcare costs
- Providing products and services that are good for the world
- Enhancing current customer satisfaction and loyalty though sustainability initiatives
- Increasing security for our employees, customers and the communities in which we operate
- Attracting new customers and developing new markets though sustainability initiatives
- Improving relations with community stakeholders including non-governmental organizations (NGOs) and community activists
- Enhancing operational efficiency through energy and waste reduction
- Reducing pollution and toxic chemical use and their effects on our employees, customers and the communities in which we operate
- Securing needed energy resources (electricity and fuel)
- Finding solutions to the challenges of an aging workforce
- Ensuring an adequate supply of water for our employees, suppliers, customers, and the communities in which we operate
- Encouraging suppliers to use management practices that enhance sustainability
- Ensuring proper employee treatment among suppliers
- Securing needed raw materials over the long term for our employees, suppliers, customers, and the communities in which we operate
- Working with other firms to voluntarily create sustainable industry standards
- Reducing and/or managing the risks and impacts of climate change on our employees customers, and the communities in which we operate
- Finding solutions to the challenges of immigration

On scale 1-5, to what extent does each of the following items drive key business decisions for your company in 10 years? (1 – not at all / 5 – to a very great extent)

- Ensuring our worker's health and safety wherever we operate
- Increasing workforce productivity
- Improving our reputation/brand image with shareholders and the public

- Effectively addressing regulatory restrictions wherever we operate
- Enhancing innovation for competitive advantage
- Meeting expectations of investors and lenders
- Attracting and retaining diverse top talent
- Improving employee morale, engagement and commitment
- Addressing challenges of healthcare systems and reducing healthcare costs
- Providing products and services that are good for the world
- Enhancing current customer satisfaction and loyalty though sustainability initiatives
- Increasing security for our employees, customers and the communities in which we operate
- Attracting new customers and developing new markets though sustainability initiatives
- Improving relations with community stakeholders including non-governmental organizations (NGOs) and community activists
- Enhancing operational efficiency through energy and waste reduction
- Reducing pollution and toxic chemical use and their effects on our employees, customers and the communities in which we operate
- Securing needed energy resources (electricity and fuel)
- Finding solutions to the challenges of an aging workforce
- Ensuring an adequate supply of water for our employees, suppliers, customers, and the communities in which we operate
- Encouraging suppliers to use management practices that enhance sustainability
- Ensuring proper employee treatment among suppliers
- Securing needed raw materials over the long term for our employees, suppliers, customers, and the communities in which we operate
- Working with other firms to voluntarily create sustainable industry standards
- Reducing and/or managing the risks and impacts of climate change on our employees customers, and the communities in which we operate
- Finding solutions to the challenges of immigration

On scale 1-5, to what extent degree does each of the following issues hinder you from moving toward sustainability? (1 – very little / 5 – very much)

- Lack of demand from consumers and customers
- Lack of demand from managers and employees
- Lack of awareness and understanding
- Lack of standardized metrics or performance benchmarks
- Lack of specific ideas on what to do and when to do it
- Lack of demand from shareholders and investors

- Lack of demand from suppliers
- Unclear or weak business case
- Lack of demand from the community
- Lack of support from senior leaders
- General risk aversion
- Fear of competitors taking advantage of us

On a scale from 1-5, rate your company on the following questions (1 – not at all / 5 – to a very great extent):

- Do you believe that your organization is implementing a sustainable strategy?
- Do you supply and/or review information that is used to develop sustainability-related metrics for your company?
- Is your organization seeing measurable results from sustainability initiatives?